

# The Bridge Project Social Innovation Fund Annual Report

FINAL EVALUATION REPORT

Submitted to the Bridge Project and Mile High United Way

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## Final Evaluation Report

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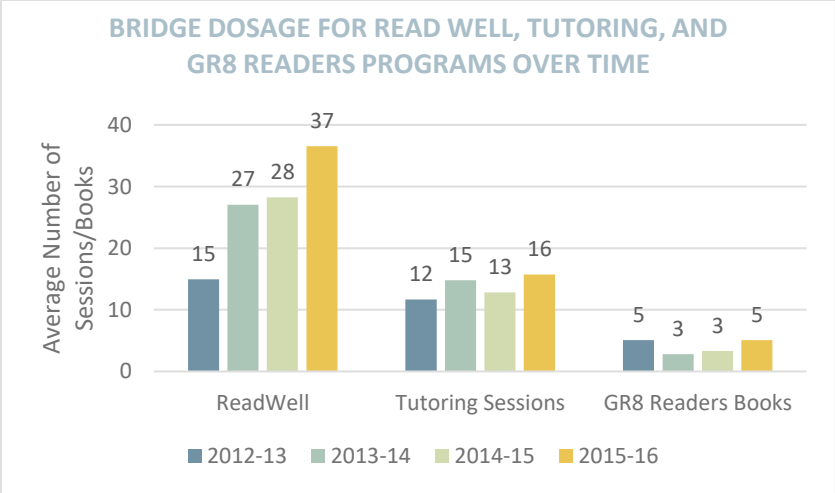
# Executive Summary

The Bridge Project promotes education as the key to self-sufficiency and breaking the cycle of poverty. Specifically, the mission of the Bridge Project is to provide a path for youth in Denver’s public housing neighborhoods to graduate from high school and go on to college or a vocation by engaging them in educational opportunities and facilitating the development of life skills and self-sufficiency. The Bridge Project provides a comprehensive early literacy intervention targeting students in K-3<sup>rd</sup> grade, with the goal of achieving reading at grade level by the end of third grade. Through a combination of three direct literacy programs, including small group instruction (Read Well), one-to-one tutoring, and the provision of books to students (GR8 Readers), the Bridge Project offers participants the opportunity to experience many facets of literacy and allows them to take an active role in their learning. Through expanded resources and the support of the Early Literacy Social Innovation Fund, the Bridge Project anticipated a significantly greater increase in the percentage of students reading at grade-level or higher among students living in public housing with access to the Bridge program than among students living in public housing without access to Bridge services.

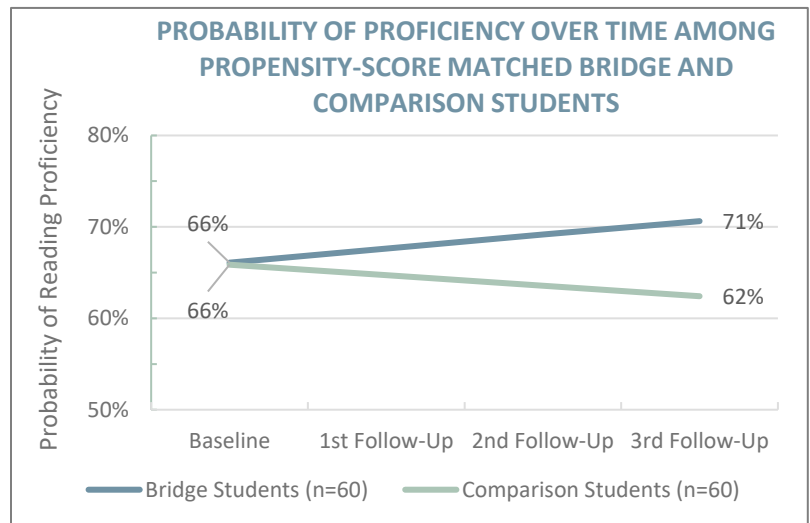
To determine the effectiveness of this intervention, OMNI Institute (OMNI) developed a mixed-methods evaluation. This evaluation consisted of a quasi-experimental, between-group design to assess whether students who receive Bridge Project services show greater gains in literacy skills than similar students who did not receive Bridge services. Students in K-3<sup>rd</sup> grades entering the Bridge Project in four public housing neighborhoods served as the treatment group. Comparison students were recruited from two similar public housing communities in which Bridge Project services are not currently available. Reading and services data were collected and analyzed to make comparisons between the two groups. Full descriptions of the program, methods, measures, and findings are presented in this report. Key findings are highlighted below:

## Key Findings

- A total of 371 students who started in grades K-3 received Bridge Project literacy services over four years.
- During the 2015-16 academic year, Bridge students received an average of 37 Read Well sessions, 16 tutoring sessions, and five GR8 Readers books per student. This reflects an increase in program dosage from previous years.



- Observations conducted during the 2015-16 academic year indicated that the Read Well and tutoring sessions were largely on-task and provided high-quality instruction to Bridge students. High quality indicators included demonstrated student learning in the five fundamental literacy skill areas (comprehension, fluency, vocabulary, phonics, and phonemic awareness) and educator competencies, including provision of clear instructions, attentiveness to student needs, and individualized student instruction.
- The Bridge program appears to significantly benefit students' reading proficiency, particularly after the first year of programming. Analyses of the quasi-experimental, between-group design find that students who receive Bridge Project services showed greater gains in literacy skills than similar children who did not receive Bridge services. By their second and third years in the program, Bridge students were outperforming their peers.



- Among Bridge students, the number of programming elements received (i.e., Read Well, tutoring, GR8 Readers, and other services) and the amount of programming received in each element was positively related to reading proficiency. Specifically, it appears that the number of GR8 Readers books that Bridge students receive was positively related to reading proficiency above and beyond the effects of Read Well, tutoring, and other services provided by the Bridge Project. However, it is important to note that GR8 Readers books are incorporated into other aspects of the Bridge Project's literacy programming, including Read Well and tutoring, and therefore should not be considered a unique effect.
- Overall, it does not appear that the Bridge Project literacy program is related to school attendance. For this secondary outcome, there is a consistent lack of differences among Bridge and comparison students across analytic models. Analyses may have been limited by the lack of variability in attendance, as both Bridge and comparison students had consistently high attendance rates over the course of the study. In practice, the Bridge program may not be able to impact attendance rates among a sample that is generally attending school regularly.

# Introduction

## Program Overview

The Bridge Project promotes education as the key to self-sufficiency and breaking the cycle of poverty. Specifically, the mission of the Bridge Project is to provide a path for youth in Denver's public housing neighborhoods to graduate from high school and go on to college or a vocation by engaging them in educational opportunities and facilitating the development of life skills and self-sufficiency. The Bridge Project provides children and youth in Denver's public housing neighborhoods with services that will lead to improved academic skills, graduation from high school, and opportunities to attend college. The Bridge Project offers a number of programs designed to help facilitate the development of academic success including homework help, mentoring, access to computers, social skills training, and support from positive and healthy adult and peer relationships.

In addition to these services, the Bridge Project offers a comprehensive literacy intervention targeting children in Kindergarten through third grade, with the goal of achieving reading at grade level by the end of third grade and improving subsequent academic achievement. The Bridge Project literacy intervention includes three program components:

**Read Well** is an evidence-based reading intervention program, delivered to small groups of students. Read Well features mastery-based and research-validated instructional strategies, unique sound sequence, differentiated instruction with flexible pacing, and ongoing assessment/progress monitoring. Trained educators provide this service to children at each of the four sites throughout the program year. During the academic year, Read Well is delivered during 45-minute sessions three times per week; during the summer, Read Well is delivered in 30 minute sessions four times per week.

**One-to-one tutoring** is an intervention in which children are matched with trained adult tutors. Once matched, students meet with the same tutor at least once a week for a 45-minute tutoring session. During this session, the children and tutors focus on reading strategies and building literacy confidence. Tutoring is offered throughout the academic year, but not during summer months.

**GR8 (Great) Readers** is an intervention designed to help children build a home library and increase reading skills and enjoyment through access to age and content appropriate books. GR8 Readers provides K-3 students with eight books over the course of the school year and eight books over the summer. Bridge educators develop the menu of books available and students are then able to select the books that they are most interested in reading and owning. During the academic year, reading of GR8 Readers books is integrated into one-to-one tutoring sessions and students are typically allowed to take each book home to keep after 4-5 tutoring sessions; during the summer, students select two sets of four books to take home twice during the summer.

## Elements of Early Literacy Instruction

This three-pronged intervention aims to address five core elements of early literacy instruction, as described by the National Institute of Child Health and Human Development and outlined in Table 1.

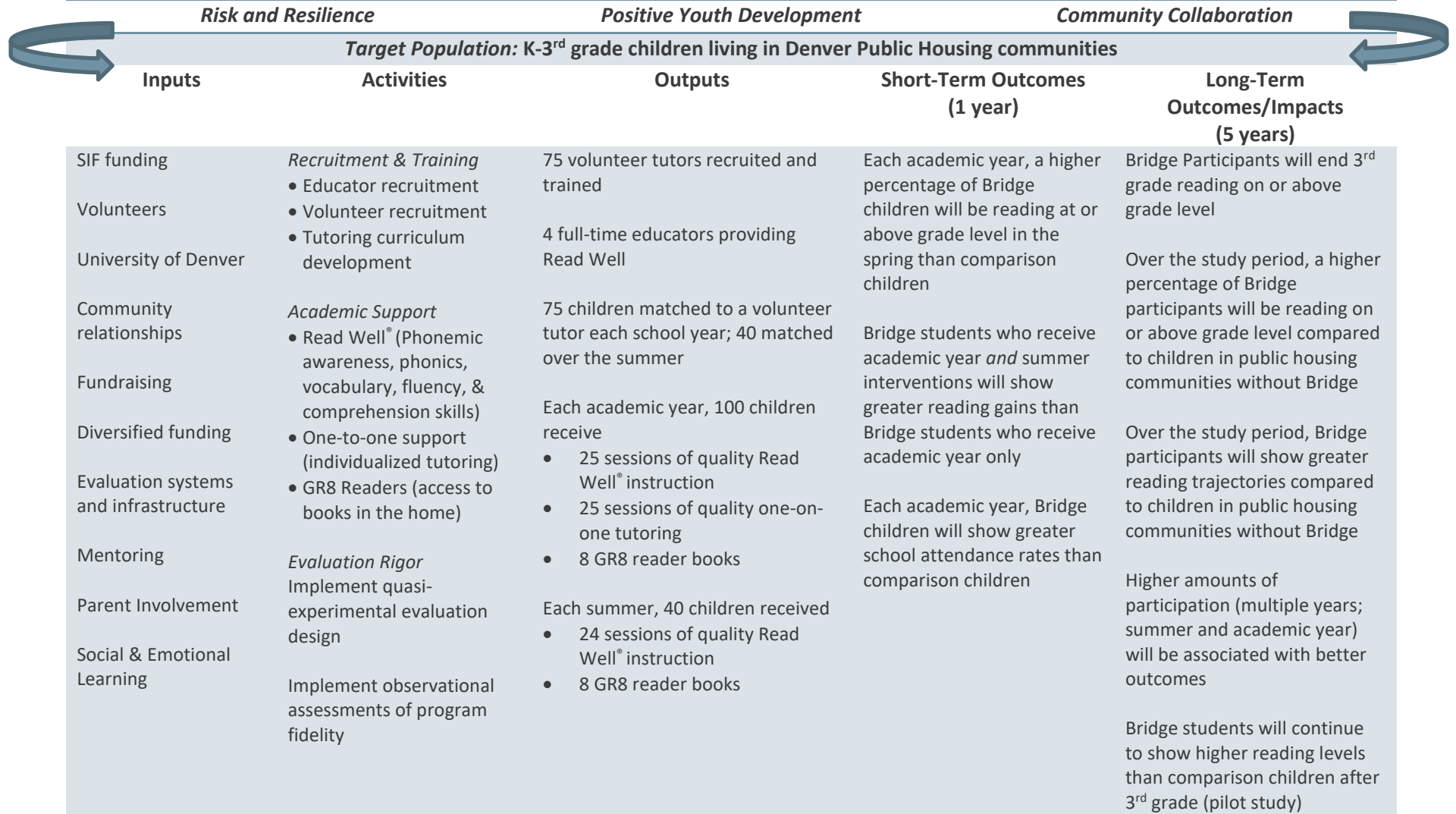


**TABLE 1 - LITERACY INSTRUCTION COMPONENTS**

<b>Element</b>	<b>Definition</b>
Phonemic Awareness	The ability to hear, identify, and manipulate the individual sounds (phonemes) in spoken words.
Phonics	Understanding the relationship between the letters (graphemes) of written language and the sounds (phonemes) of spoken language; learning letter-sound relationships.
Fluency	The ability to read with accuracy, and with an appropriate rate, expression, and phrasing.
Vocabulary	Understanding the meaning of the words we must know to communicate effectively in listening, speaking, reading, and writing.
Comprehension	The ability to understand, remember, and communicate with others about what is read.

A program logic model depicting the Bridge early literacy intervention components appears on the following page (see Figure 1).

**Figure 1. The Bridge Project Social Innovation Fund Early Literacy Program Model**



# Evaluation Overview

The evaluation of Bridge Project literacy programming consists of a mixed-methods approach, including a quasi-experimental, between-group design to assess whether children who receive Bridge Project services show greater gains in literacy skills than similar children who do not receive Bridge services. Children in K-3<sup>rd</sup> grades entering the Bridge Project in four public housing neighborhoods serve as the treatment group. Because all children in these neighborhoods are eligible for and can receive Bridge services, comparison children were recruited from two similar public housing neighborhoods in which Bridge Project services were not available. The comparison group thus provides the counterfactual condition for the study, demonstrating literacy outcomes for students similar to those served by Bridge who did not receive the intervention. For students whose parents consent to participating in the study, data on family and child demographic characteristics (e.g., race, ethnicity, age, parental expectations of children’s academic success, housing community) are collected at intake and include children’s Denver Public Schools (DPS) identifiers. This allows the project to access school literacy assessment data for all DPS students who consent to participate in the study.<sup>1</sup> Analyses over the course of the study compare reading assessment over time for children in the treatment and comparison groups to quantify program impact. Propensity score matching techniques are used to adjust for pre-intervention differences between students in the Bridge (treatment) and comparison groups.

## Evaluation Questions

The Social Innovation Fund study of the Bridge Project early literacy program seeks to address both impact and implementation questions, as outlined in the project’s approved Sub-Grantee Evaluation Plan. Research questions addressed in the current report appear in Table 2.

**TABLE 2 - RESEARCH QUESTIONS ADDRESSED IN THE CURRENT STUDY**

Implementation Questions
1. What level of program intervention was provided? a) How many Bridge children were matched to a tutor? b) How many sessions of Read Well® instruction were provided to participants? c) How many hours of one-on-one instruction were provided to participants? d) How many books were provided to students as part of GR8 readers? e) Did these differ as a function of housing community, grade or other demographic characteristics? f) Did these differ during the academic year and over the summer?
2. To what extent did volunteer tutors and education specialists deliver the program with fidelity? Was this consistent across Bridge sites?

<sup>1</sup> Most, but not all, students served by the Bridge Project attend Denver Public Schools. Outcome data are not available for study participants attending a non-DPS school.

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### Implementation Questions

3. What are implementation challenges associated with each type of intervention, do these differ as a function of child or site characteristics, timing of the intervention, and what are acceptable solutions to these challenges (i.e., that do not violate fidelity to the model)?

### Impact Questions

#### Confirmatory Impact Questions:

1. Do more Bridge children show greater improvements in reading at or above grade level than comparison children at the end of each year and at the end of the study (binary DRA-2)?
2. Do Bridge children show greater reading gains than comparison children, within each academic year and across all years of the study (truncated DRA-2)?<sup>2</sup>
3. Do Bridge children show greater improvement in rates of school attendance than comparison children, within each academic year and across all years of the study (secondary outcome)?

#### Exploratory Impact Questions:

5. Are more Bridge children reading at or above grade level by the end of third grade than comparison children?
6. Does the amount or type of literacy programming predict reading gains? For example, does the number of years of participation in the program predict reading gains?
7. What is the strength of the relationship between number of hours of participation and reading gains? Does this differ across program component?
8. Which literacy program activities are most closely associated to reading gains; what are the critical program elements for success?
9. Are results for grades K-3 maintained for Bridge children who reach fourth or fifth grade during the study period? Do these Bridge children show greater long-term gains in reading achievement than comparison children?

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## Methods and Measures

Data for this mixed methods study were collected in a variety of methods. Quantitative measures include: a) an information sheet completed by parents of study participants; b) services data as entered by staff responsible for delivering Bridge Project programming; and c) reading and attendance data from Denver Public Schools (DPS) Department of Assessment, Research and Evaluation (ARE). Qualitative data were collected through observations of both Read Well and tutoring sessions. Key data sources reflected in this report are outlined in Table 3.

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<sup>2</sup> For question 1b, we revised the analysis strategy to explore grade level equivalencies rather than conducting a truncated grade level analysis. We learned that teachers administer the full DRA-2 independent level in the spring, therefore, this truncated approach was no longer needed and was replaced with a measure of grade level discrepancy.

**TABLE 3 - STUDY DATA SOURCES**

<b>Source Name</b>	<b>Description</b>
<b>Study Intake Forms</b>	Parents of study participants, both Bridge Project and comparison students, complete a detailed intake form upon enrollment in the study. <sup>3</sup> Data collected from these forms include information about the family and the child, including: number of family members, number of children, household income, parent education, language spoken at home and child characteristics such as age, gender, race, grade, preschool attendance. The forms also include information about the home environment, such as the frequency of family dinners, number of books owned by the child, frequency of reading with the child and parental expectations about school for the child.
<b>Services Data</b>	Bridge site staff use a web-based data system to document student attendance during Read Well and Tutoring sessions. Specifically, student attendance data are documented by site administrative staff and entered into the database. The number of GR8 readers books given to a youth is also entered into this database. This log provides a cumulative list of individual students participating in GR8 Readers, the title(s) of the book(s) they received, and the date(s) on which they were given each GR8 Readers book to take home. OMNI staff extracts the services data from the Bridge database for analysis.
<b>Observations</b>	During each year of the study, members of the research team conduct structured observations of Read Well and tutoring sessions delivered at each of the four Bridge sites. Over the past five years, these observations occurred during the academic year and were conducted using structured observation protocols designed for each program component (i.e., one for Read Well and one for tutoring) to ensure consistent data collection practices. The use of this observation tool has allowed for the standardized collection of quantitative data in several key areas to examine consistency across sessions. Qualitative notes were also taken to provide contextual and descriptive information. The full observation tools can be found in Appendices A and B. Observations were conducted during randomly selected sessions (for Read Well) or program weeks (for tutoring) from among the full list of days on which Bridge programs were open during the school year. Selected observation dates were provided to staff at each of the Bridge sites in advance to confirm that the respective programming was scheduled to occur on the selected dates. Quantitative data gathered from each observation tool were aggregated and analyzed using SPSS. Qualitative observation notes were analyzed to supplement quantitative findings where appropriate. Data gathered during each observation was documented using the observation protocol and analyzed to describe the components of Read Well and tutoring sessions that appeared to influence session quality, content, and effectiveness.

<sup>3</sup> Parents of Bridge Project participants also complete an intake form at the start of each Bridge enrollment period (i.e., each academic year and each summer).

Source Name	Description
School-based Data	<p data-bbox="399 237 1458 386">Each year, the research team submits a list of all students enrolled in the study to be matched to literacy assessment data collected by DPS. In November 2016, DPS ARE provided data for students enrolled in the study and in DPS. Specifically, the project received the following data from DPS:</p> <p data-bbox="399 401 1458 1121"><b>DRA-2 reading scores.</b> The DRA-2 is a standardized reading assessment that evaluates reading on different domains including word analysis, oral fluency and comprehension (Pearson Education, 2011). The DRA-2 has been demonstrated to be a reliable reading assessment and has concurrent validity with other reading assessments, including the Grays Oral Reading Test (GORT-4), the DIEBELS, and with teacher ratings (Rathvon, 2008). Each spring, teachers in DPS administer the DRA-2 with K-3 students to assess students' independent reading level. Benchmark assessments are leveled from A to 40. The following benchmarks were identified by the Colorado Department of Education to indicate grade-level reading at the end of each of grade: Kindergarten = 3; 1<sup>st</sup> grade = 18 2<sup>nd</sup> grade = 28; 3<sup>rd</sup> grade = 38. Based on these benchmarks, the teachers assign each student an independent reading level which identifies the student as reading below grade level, on grade level or above grade level. Additionally, the DRA-2 technical manual indicates grade-level cut points for students who are proficient/independent (reading at or above grade-level); instructional level (a 'yellow flag'), needing to be closely monitored and possibly in need of additional support; and intervention level (a 'red flag') or in need of significant intervention. With these categories as a reference point, students in the Bridge Project study are classified into three categories based on their reading level:</p> <ul data-bbox="431 1136 1382 1247" style="list-style-type: none"> <li data-bbox="431 1136 1052 1161">▪ Proficient/Independent: At or above grade level;</li> <li data-bbox="431 1176 1382 1201">▪ Partially Proficient: Below grade-level, but not below the 'red flag' level; and</li> <li data-bbox="431 1215 1276 1241">▪ Not proficient, scoring in need of more intensive support, 'red flag'.</li> </ul> <p data-bbox="399 1255 1458 1570">DRA-2 Independent Reading Level assigned by teachers during the prior spring serves as the baseline measure for all students who enrolled in the study in 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> grades. The baseline level reflects the student's performance on the DRA-2 during the spring of the year prior to study enrollment (e.g., students enrolled in the study as 1<sup>st</sup> graders have baseline DRA-2 Independent Reading Level data from the spring of their kindergarten year). Independent Reading Level assigned by teachers during the following spring serves as the posttest measure Each subsequent spring, the project requests DRA-2 data for students who are enrolled in the study.</p> <p data-bbox="399 1585 1458 1696"><b>DRA-2 Word Analysis Mastery.</b> Seven of the DRA-2 Word Analysis Tasks, administered at start of the academic year, serve as the baseline measure for all students enrolled in the study during their kindergarten year. The seven tasks are:</p> <ul data-bbox="431 1711 1458 1862" style="list-style-type: none"> <li data-bbox="431 1711 1458 1776">▪ Task 1: Identify a picture whose name rhymes with the name of the first picture in the set</li> <li data-bbox="431 1791 1458 1862">▪ Task 2: Identify a picture whose name begins with the same sound as the name of the first picture in the set</li> </ul>

Source Name	Description
	<ul style="list-style-type: none"> <li>▪ Task 3: Isolate the initial sound of a word given by the teacher</li> <li>▪ Task 4: Demonstrate that the student understands language used to talk about printed language concepts using their first and last names</li> <li>▪ Task 5: Name randomly placed uppercase letters</li> <li>▪ Task 6: Name randomly placed lowercase letters</li> <li>▪ Task 7: Demonstrate that the student understands language used to talk about printed language concepts using words in sentences</li> </ul> <p>Students are assigned a score of between zero and two for each task, reflecting “no or little control” (0), “some control” (1) and “gaining or having control” (2). These data serve as the baseline measure for all kindergarten students enrolled in the study, as the full DRA-2 assessment is not administered with kindergarten students until the spring of the kindergarten year. Based on guidance received from DPS, study students with mastery levels of “gaining or having control” on four or more of the seven tasks are defined as proficient.</p> <p><b>Attendance.</b> Denver Public Schools tracks student attendance in minutes, and the annual attendance rate is calculated as follows: total number of minutes a child attended a DPS school/total number of minutes a child was enrolled in DPS.</p>

### Study Sample

The treatment and comparison groups in the study are divided as follows:

**Treatment Group:** Children in grades K-3 entered the Bridge Project in four public housing neighborhoods (Columbine, Quigg Newton, South Lincoln/Lincoln Park, and Westwood). Specifically, all kindergarten students participating in the Bridge project, and 1<sup>st</sup>-3<sup>rd</sup> grade students who had never participated in Bridge programming were eligible to enroll in the treatment group.

**Comparison Group:** Because all children residing in public housing neighborhoods served by the Bridge Project were eligible to receive Bridge services, comparison children were recruited from two similar public housing communities, Westridge and Sun Valley, in which Bridge Project services were not available. The comparison group thus provides the counterfactual condition for the study.

A total of 543 students (389 Bridge; 154 comparison) were enrolled into the study. Table 4 provides the number of students who enrolled into the study by condition and year of enrollment. Comparison students enrolled into the study during the academic year. Bridge participants enrolled into the study either at the beginning of the academic year or at the beginning of the summer. Bridge students who enrolled during the summer had to continue enrollment into the following academic year to be included in the study (i.e. students receiving ‘summer-only’ programming were not included in the evaluation and are not reported in Table 4).

**TABLE 4 - STUDY POPULATION ENROLLMENT AND BRIDGE ATTENDANCE**

<b>Count of students by condition and enrollment period</b>								
<b>Study Group</b>	<b>2012-13</b>	<b>Summer 2013</b>	<b>2013-14</b>	<b>Summer 2014</b>	<b>2014-15</b>	<b>Summer 2015</b>	<b>2015-16</b>	<b>Total</b>
<i>Comparison Students</i>	19	0	33	0	67	0	35	154
<i>Bridge Students</i>	95	40	72	29	82	35	36	389
<b>Total count of students served by Bridge by time period</b>								
<b>Study Group</b>	<b>2012-13</b>	<b>Summer 2013</b>	<b>2013-14</b>	<b>Summer 2014</b>	<b>2014-15</b>	<b>Summer 2015</b>	<b>2015-16</b>	
<i>Bridge Students</i>	95	69	128	91	166	117	116	
<b>Total count of students served in each grade by academic year</b>								
<b>Grade</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>				
<i>Kindergarten</i>	45	35	44	16				
<i>1st Grade</i>	18	41	36	22				
<i>2nd Grade</i>	14	19	45	32				
<i>3rd Grade</i>	17	28	24	24				
<i>4th Grade</i>	-	5	14	13				
<i>5th Grade</i>		-	4	6				
<i>6th Grade</i>			-	3				
<b>Total count of students served at each site by academic year</b>								
<b>Bridge Site</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>				
<i>Columbine</i>	12	12	24	26				
<i>Quigg Newton</i>	23	37	22	23				
<i>South Lincoln</i>	14	13	47	27				
<i>Westwood</i>	45	66	74	40				



# Implementation Study Results

Implementation questions focus on early literacy program dosage received by students served; variation in program dosage by Bridge site, student characteristics, and programming period (school year or summer); and implementation fidelity. This report section first explores the level and variation of program intervention for Bridge students, followed by a discussion of qualitative data gathered to assess the degree of fidelity to the program model overall and across sites. Implementation challenges are also summarized in the Key Lessons Learned and Next Steps section at the end of this report.

## What level of program intervention was provided? Did the level of programming intervention vary by Bridge Project site, student characteristics or programming period?

### School Year Program Dosage

Service dosage data were available for 126 of the Bridge study students served by the program during the 2015-16 school year. As shown in Table 5, 81 students received at least one Read Well session, with an average of about 37 sessions per student; 83 students received at least one tutoring session, with an average of about 16 sessions per student; and 80 students received at least one GR8 Readers book, with an average of five books per student. Across these programs, there was an increase in service dosage from the 2014-15 year, such that Bridge students in 2015-16 received an average of eight more Read Well sessions, three more tutoring sessions, and nearly two more books than Bridge students in 2014-15.

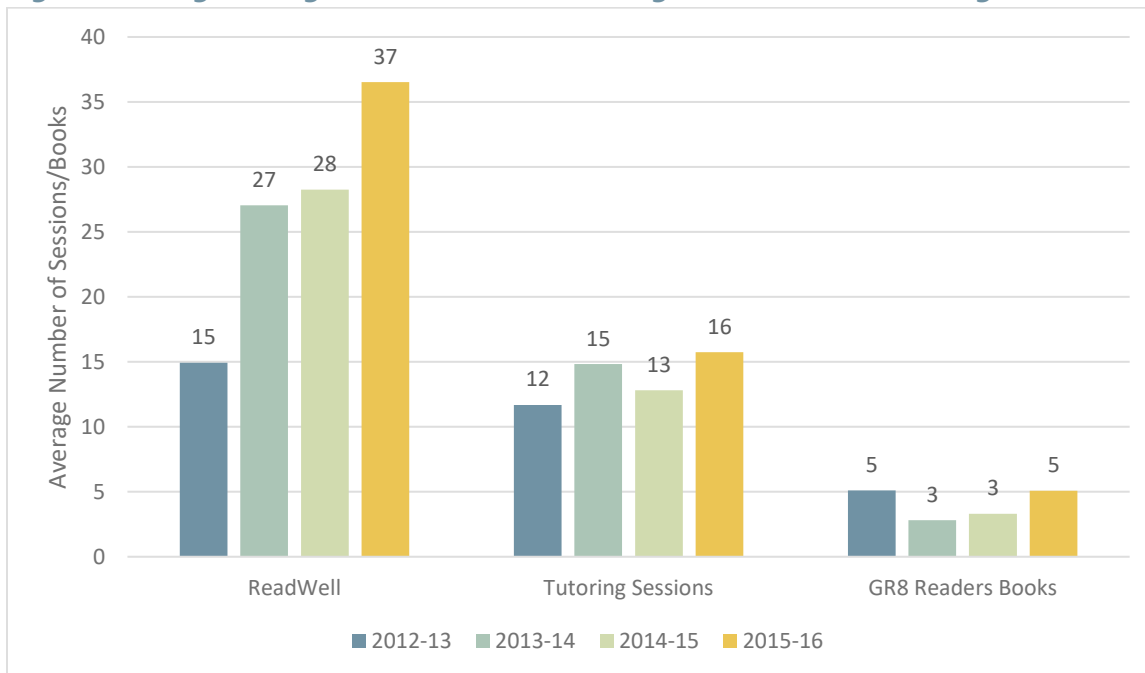
**TABLE 5 - BRIDGE PROGRAM DOSAGE**

Activity Type	Count (N)	Min.	Max.	Average
<b>2015-16 Academic Year</b>				
Matched to Service Data File	126	n/a	n/a	n/a
Read Well Sessions	81	1	82	36.53
Tutoring Sessions	83	1	35	15.73
GR8 Readers Books Received	80	1	15	5.09
<b>2014-15 Academic Year</b>				
Matched to Service Data File	167	n/a	n/a	n/a
Read Well Sessions	130	1	82	28.25
Tutoring Sessions	103	1	37	12.8
GR8 Readers Books Received	58	1	7	3.31
<b>2013-14 Academic Year</b>				
Matched to Service Data File	104	n/a	n/a	n/a
Read Well Sessions	91	1	85	27.04
Tutoring Sessions	62	1	49	14.82
GR8 Readers Books Received	38	1	8	2.82
<b>2012-13 Academic Year</b>				
Matched to Service Data File	84	n/a	n/a	n/a
Read Well Sessions	72	1	57	14.93

Tutoring Sessions	36	1	30	11.69
GR8 Readers Books Received	18	1	13	5.11

The average number of Read Well and Tutoring sessions generally increased over four years of the Bridge study (i.e., from 2012-13 to 2015-16; see Figure 2). While the average number of GR8 Readers books received by students in 2015-16 was similar to the average number of books received by students in 2012-13, this average for 2015-16 represented an increase from 2013-14 and 2014-15. Additionally, the total number of students who received books was over four times higher in 2015-16 than in 2012-13.

**Figure 2. Bridge Dosage for Read Well, Tutoring, and GR8 Readers Programs Over Time**



### Observations and Fidelity Reports

**To what extent did Bridge Project staff and volunteers deliver the program with fidelity? Was this consistent across Bridge Project sites? What are implementation challenges associated with each program component?**

In the 2015-2016 academic year, one OMNI staff member conducted a total of 16 discrete observations of Read Well sessions across the four Bridge sites. Specifically, a total of four observations were conducted per site, including two observations of the K/1 Read Well group and two observations of the 2/3 Read Well group at each site. In addition, there were 12 tutoring observations, three in each of the four Bridge sites.

## Read Well Overview

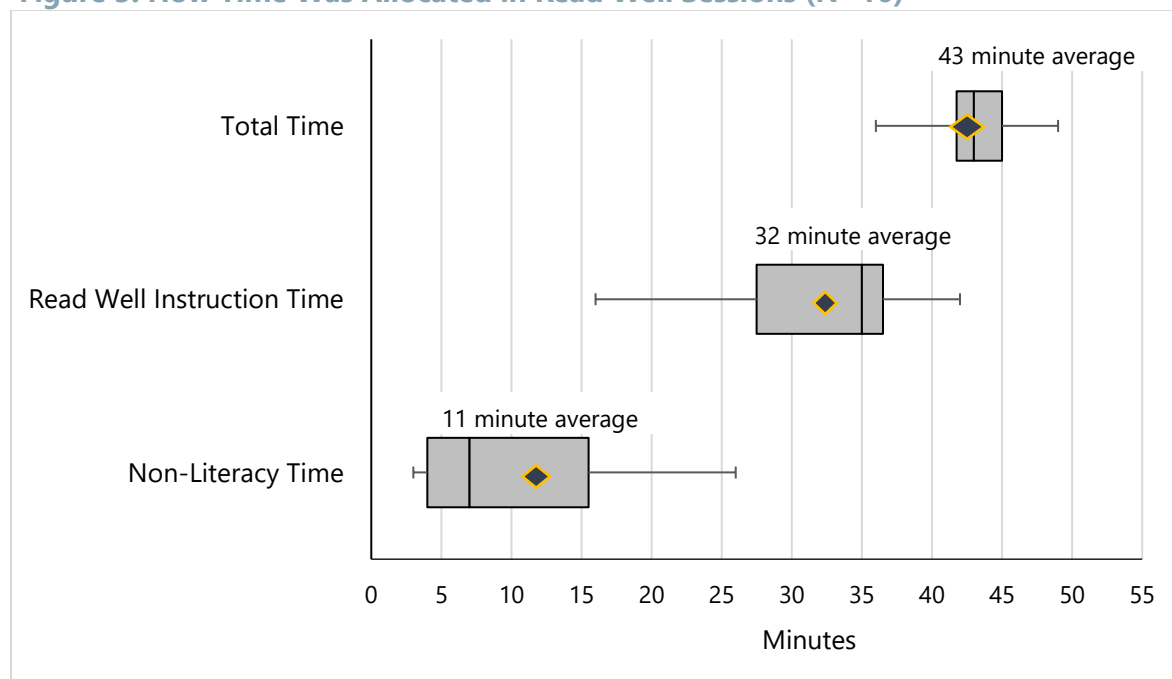
The observed Read Well sessions were led by a trained Educator, included an average of seven students per session, and were typically 42.8 minutes in duration. Table 6 summarizes general information about the observed sessions.

**TABLE 6 - READ WELL SESSION OBSERVATION INFORMATION**

	N	Mean	Minimum	Maximum
Duration (minutes)	16	42.8	36.0	49.0
Total Number of Students	16	7.0	4.0	11.0
Number of Boys	16	3.5	1.0	7.0
Number of Girls	16	3.5	1.0	6.0

The time spent in Read Well instruction included direct instruction, literacy activities and some activities not focused directly on literacy, such as games and art activities offered as a reward; and opportunities for students to rest through physical movement or time spent outside. As seen in Figure 3, most session time was devoted to Read Well instruction.

**Figure 3. How Time Was Allocated in Read Well Sessions (N=16)\***



\*Outer bounds represent the minimum and maximum number of minutes spent in a session, grey boxes represent the middle 50% of sessions, box dividers represent the median number of minutes, and diamonds represent the average number of minutes.

Similar to the findings from 2014-15, students are spending the clear majority of session time on Read Well curriculum under the supervision of the Educator. We did observe a slight increase in the average

amount of time spent on Read Well from 29 minutes in 2014-15 to 32 minutes in 2015-16. Additionally, the average amount of time spent on non-literacy activities increased from eight minutes to 10 minutes. During 2014-15, much of the non-literacy time was spent on regaining student focus after transitions or taking time to address student behavioral issues, whereas during the current year, this time also included the newly instituted Warm Welcome and Reflection portions of each session.

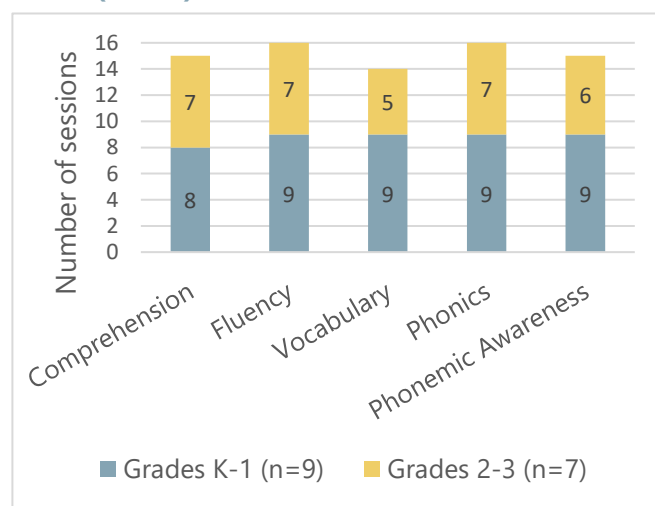
During the 2015-16 year, the Bridge Project instituted two new components to the Read Well session, the Warm Welcome and the Reflection. The Warm Welcome was a few minutes at the beginning of each session for the Educator to discuss with the students what the session will look like, expectations, and to check in with student about how they were doing. The Reflection portion took place at the end of each session and allowed the Educator to review with the students what they covered, and the students to share how they felt the session went. Of the 16 sessions that were observed, 10 included time for Warm Welcome, and 12 involved Reflection. The Warm Welcome and Reflection components were instituted as part of Bridge’s participation in the Youth Program Quality Intervention (YPQI) process. The YPQI resulted from learnings from the prior 2014-15 observations, during which behavior management concerns were identified, and was intended to help staff identify elements that could increase the quality of programming; Warm Welcome and Reflection were added to increase engagement to promote more positive classroom behaviors.

*Read Well Activities and Lesson Components:* The Read Well curriculum includes four different types of activities: Decoding Activities, Story Reading, Partner Reading, and Follow-Up Activities. Observed sessions usually began with Decoding Activities, which are based on the Decoding Sheets provided by the Read Well curriculum. All four sites had the students work through the Decoding Sheets verbally as a group. Decoding Activities were generally followed by Story Reading, Follow-Up Activities, and Other Activities when included. Other Activities were mostly literacy-focused, except for a few that were non-literacy focused. These activities included drawing/coloring, games, and practicing handwriting skills.

*Literacy Skill Areas:*

Observations assessed the extent to which each of the five fundamental literacy skill areas were explicitly addressed for each grade level. In comparison to observations conducted in 2014-15, there was a noticeable increase in the number of sessions that addressed vocabulary with grades K-1, from two to nine. Comprehension, phonics, phonemic awareness, and fluency were addressed in the clear majority (93.8%-100%) of sessions. Fluency was addressed in 100% for both levels, which is an increase from the 43.7% of sessions that covering the skill area in 2014-15.

**Figure 4. Literacy Skills Addressed in Read Well Sessions (N=16)**



Additionally, there was an increase in the number of sessions that involved vocabulary from eight to 14.

*Use of Small Groups:* Bridge educators occasionally divide students into small groups during Read Well sessions. Specifically, in 2015-16, students were divided into small groups in half (eight) of the observed sessions, which was an increase of three sessions from 2014-15. The use of small groups was observed at all but one Bridge site. Most commonly, students were separated into groups by grade or reading level. During four of the eight sessions, one educator was responsible for supervising multiple small groups. During these sessions, the groups that did not have the undivided attention of the educator were at times distracted, but generally kept each other focused and on task. In the other four sessions, each small group was supervised by either the educator or another adult and fewer distractions were observed.

*Read Well Session Environment:* All observed Read Well sessions were held in a designated space that was separated from other Bridge activities. The space included a place to store Read Well materials, and classrooms at all sites had a whiteboard at the front of the room to which students directed their attention. Some observed sessions had students sitting at one large table or at tables arranged in a semicircle, and others had them sitting at multiple tables. Although having all students at one large table or in a semicircle seemed to make it easier for the students to see and track one another while they read aloud or answered questions, having multiple tables allowed Educators to easily divide students into groups for an activity if they so desired.

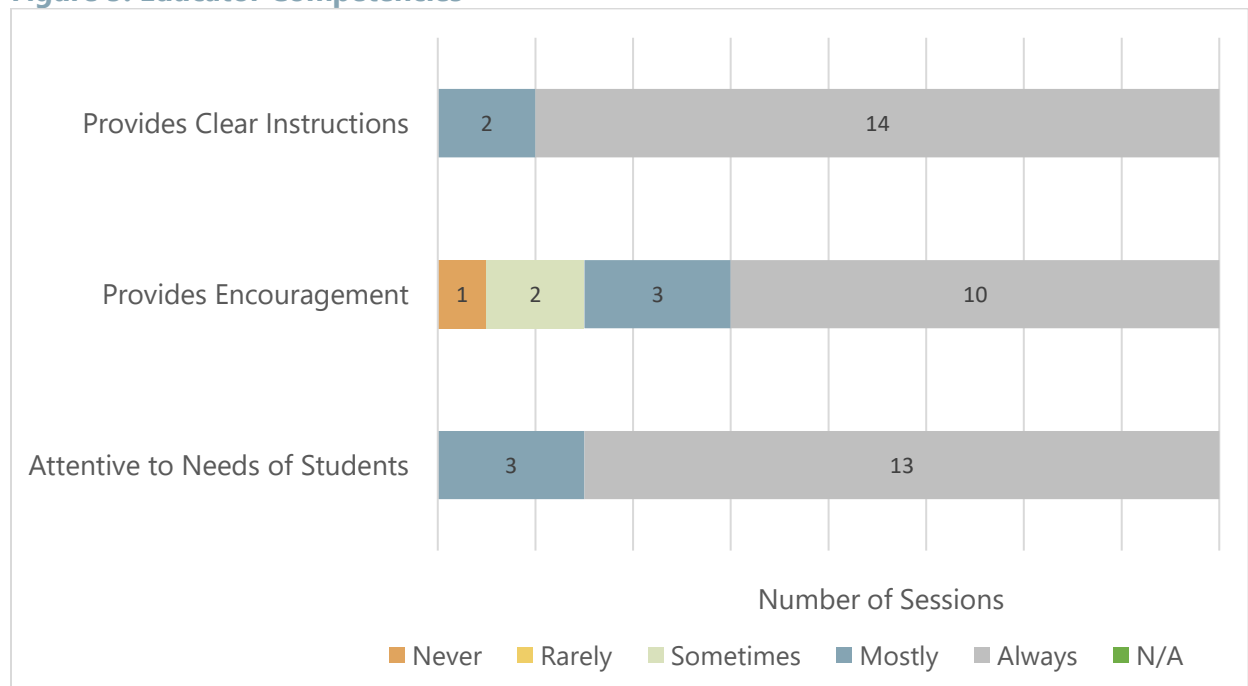
*Environmental Distractions:* The observer rated each session as having many, some, or no external and internal distractions. Internal distractions included those that were internal to the small group (e.g., talking or misbehaving by other students, objects brought into the classroom by students, or students leaving the room). External distractions included those that were external to the small group (e.g., looking out of a window, or other students or adults entering the room). In nine of the 16 observed sessions, at least one student entered the session late, was sent out temporarily, or left the session early. This was a decrease from 2014-15 in which all sessions were observed to have students coming and going during Read Well sessions. Students were observed to be disruptive in 11 of the 28 (39.2%) instances when they entered late, left early, or went out temporarily. This was a significant improvement from the previous round of observations in which almost 80% of such instances were disruptive. Adults other than the Educator entered the classroom in three of the 16 observed sessions, with the number of other adults entering during a session never being over two. Additionally, this occurred at just one site, and reasons for other adults entering included taking attendance and removing students who were going home or needed additional discipline. The observer also rated each instance of other adults entering the room on whether it was disruptive to the session. There was only one instance of another adult entering the session that was distracting to the students. This marks a decrease from last year's findings, in which other adults who entered Read Well sessions caused distractions on numerous occasions.

*Student Learning and Behaviors:* The observer rated student behaviors during the Read Well sessions. Overall, students were observed to both enjoy and benefit from the Read Well curriculum. When

students were focused on curriculum, they were generally engaged with the material and were eager to help the Educator with tasks such as cleaning up. Students also displayed behavioral issues less frequently this year than in the past. The number of sessions that were observed in the 2015-16 academic year to have “many” internal distractions was 2, which was an improvement from 2014-15 in which 10 of the 16 sessions had many distractions. During both years of observations, internal distractions were comprised of instances involving students misbehaving. Out of the 113 students observed, 23 (20.3%) displayed behavioral issues. This marks an improvement from the previous round in which 55.8% of students observed displayed behavioral issues. All but four of the 16 observed sessions had at least one student disrupt the class during the session, with an average of 1.4 students acting out per session. Half of the sessions in which there were student disruptions involved only one student. Observed behavioral issues included talking while the Educator was teaching, distracting other students, refusing to follow instructions, and standing up and moving around the classroom at inappropriate times.

*Instructional Skill of Educators:* Overall, Educators demonstrated strong abilities in delivering the Read Well Curriculum. In all observed sessions, lessons and materials were planned and content and materials were generally appropriate for students’ academic level. As shown in Figure 5, Educators often provided clear instructions, provided encouragement, and were attentive to the needs of their students in most observed sessions.

**Figure 5. Educator Competencies**



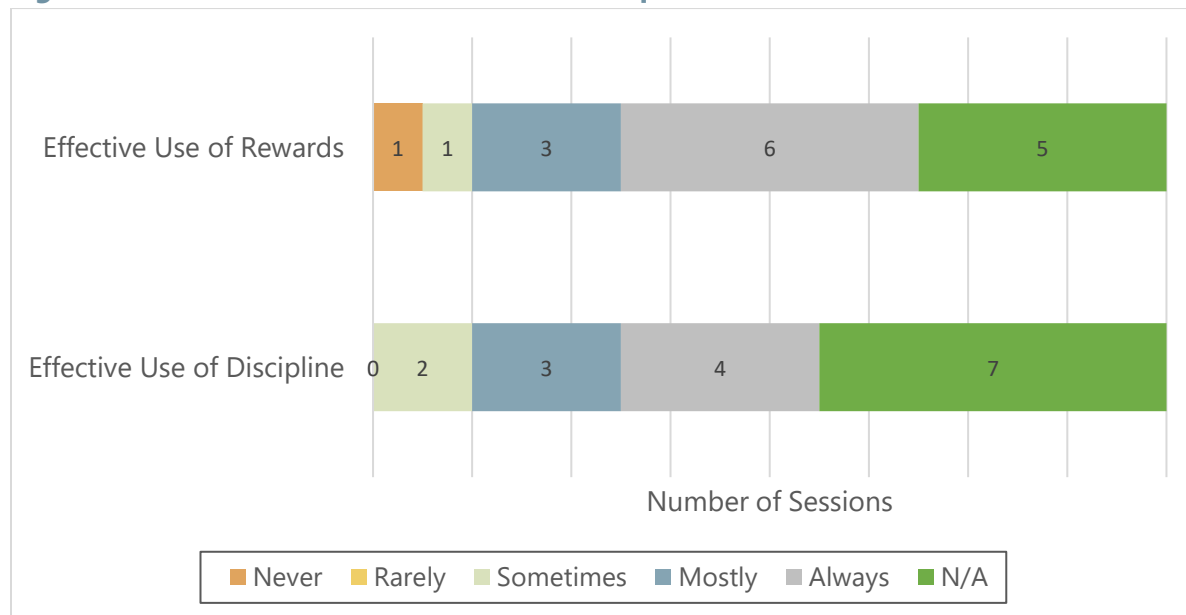
\*N/A indicates that rewards/consequences were either not used or were unnecessary during the session.

*Effective Use of Rewards and Consequences:* The observer also documented the efficacy of rewards and consequences used by Educators. As seen in Figure 6, rewards were used in 11 of the 16 observed

sessions and were perceived to be effective. The number of sessions where the use of rewards was “always” effective increased from two during the 2014-15 academic year to six in 2015-16. Examples of instances where the use of a reward was less effective includes its failure to be used as an incentive for improved behavior, and students not noticing when an educator placed a PBIS ticket by them and therefore were not knowledgeable of why they received it. All Bridge sites used a certain degree of student choice in how to use “free” time as reward for positive behavior and performance. Verbal praise was observed at all sites, and two sites utilized the distribution of Positive Behavior Interventions and Supports (PBIS) tickets. It was observed that verbal praise that was specific to both the behavior and individual in combination with a PBIS ticket appeared to be most effective.

Consequences were used in nine of the 16 sessions, which was a decrease from 2014-15 in which 12 of the 16 sessions required consequences. Additionally, the number of sessions where discipline was “always” used effectively increased from one to four. Disincentives that were used included verbal reprimands directed at individuals or the entire group, asking students to leave the group and sit alone, and taking away group rewards such as a promised free time. Overall, disincentives that were directed at individuals seemed more effective than those directed at the entire group. At one site, the educator would ask for help from the entire class when an individual was either acting out or distracting others. The educator would ask the students to raise their hand and offer suggestions for how the group can help the individual re-engage or become more focused. This strategy appeared to be effective in keeping the entire group on track.

**Figure 6. Effective Use of Rewards and Consequences**



*Bridge Educator Observations*

To expand opportunities for peer-learning and information sharing between Bridge staff at all sites, as well as continue to monitor program fidelity, each Read Well Educator performed two observations of sessions that were conducted by another Educator. During the 2015-16 school year, eight educator

observations were performed, two at each site. In general, the data collected during the Educator observations was similar to data collected by OMNI. Specifically, for both OMNI and Educator observed sessions, each Read Well session was well planned, appropriate in content, and most students were engaged with the material.

Additionally, areas of difference from 2014-15 such as quality of transitions, student behaviors, and educator competencies were more closely aligned during the current round of observations. Despite the many similarities, it is important to note that the opportunity each Educator had to observe one another's methods offered a wealth of knowledge, and at times, remaining solely focused on filling out the data collection tool was not a priority. For this reason, there were several observation areas that were not fully completed by the Educators, making a full comparison difficult.

### *Read Well Implementation Strengths and Challenges*

Bridge Project students were observed to both enjoy and benefit from Read Well programming. Overall, students were engaged with the material, followed Educators' instructions, and demonstrated learning of literacy skills during Read Well sessions. Observation data also revealed that overall Educators demonstrate strong abilities in delivering the Read Well curriculum by providing clear instructions, encouraging students, and attending to the needs of students.

Compared to last year, this round of observation findings showed an increased amount of time students spend working on Read Well curriculum. In the 2015-16 academic year, the average time each session utilized Read Well material was 32 minutes, which was an increase from the 29-minute average in the previous year. Additionally, the number of students coming and going from the session, which was a cause for much distraction during the 2014-15 academic year, decreased during the 2015-16 year.

Effective use of rewards and consequences has been an area of growth for the Read Well program over the years, although developments in this area continue. As a result of the YPQI process, educators are trying new approaches to address student behavior and effective encouragement and incentive, which were noted as contributing to the improvements in this area.

## Tutoring Overview

As a component of the Bridge Project evaluation, OMNI Institute research staff conducted observations of tutoring sessions across the four Bridge implementation sites. There were three primary goals for the observations:

- *Enable the research team to provide program staff with a systematic description of tutoring sessions across all four sites;*
- *Provide data on the extent to which tutoring sessions are implemented with fidelity to the instructional model outlined by the Bridge Project; and*
- *Provide recommendations to promote the ongoing improvement of tutoring programming, as necessary*



Between January and May 2016 two research team members observed three tutoring sessions in each of the four Bridge sites for a total of twelve observations. The research team randomly selected the week during which tutoring observations would occur and then worked with site staff to identify K-3 tutor pairs scheduled to meet during the selected week.

Consistent with the Bridge tutoring guidelines, most tutoring sessions followed this general agenda:

1. Homework time (observed in six out of 12 (50%) sessions)
2. GR8 Readers book reading (observed in 10 out of 12 (83.3%) sessions)
3. GR8 Readers packet work (observed in four out of 12 (33.3%) sessions)
4. Skill-building activity (observed in four out of 12 (33.3%) session)
5. Reward time (observed in 10 out of 12 (83.3%) sessions)

*Allocation of Session Time:* The amount of time spent on literacy-focused activities varied among the tutoring sessions observed. Sessions lasted an average of 44 minutes, with a minimum session length of 25 minutes and a maximum session length of 58 minutes. All tutoring sessions included time for literacy-focused activities, with an average of 28 minutes of literacy-focused time, a minimum of 16 minutes and a maximum of 52 minutes. All sessions included time for non-literacy activities, which included non-literacy focused homework, math skill-building activities, and reward time. Sessions included an average of 16 minutes of non-literacy time, with a minimum of five minutes and a maximum of 32 minutes. On average, 64% of each session was spent on literacy related activities, which is an increase from 69% in 2014-15.

The variability in literacy versus non-literacy time sometimes was driven by the needs, abilities, and behavior of the student. For example, some students had a greater amount of non-literacy focused homework to complete. In other cases, the tutoring session structure was set by the tutor. For example, one tutor informed the observer that the student's mother had requested that their session focus on getting homework, since the student was behind. Another example of this is a session in which the tutor alerted the observer to attention-deficit limitations for a student in which their sessions are generally shorter. Additionally, some tutors chose to spend a greater amount of time participating in free-time with the student.

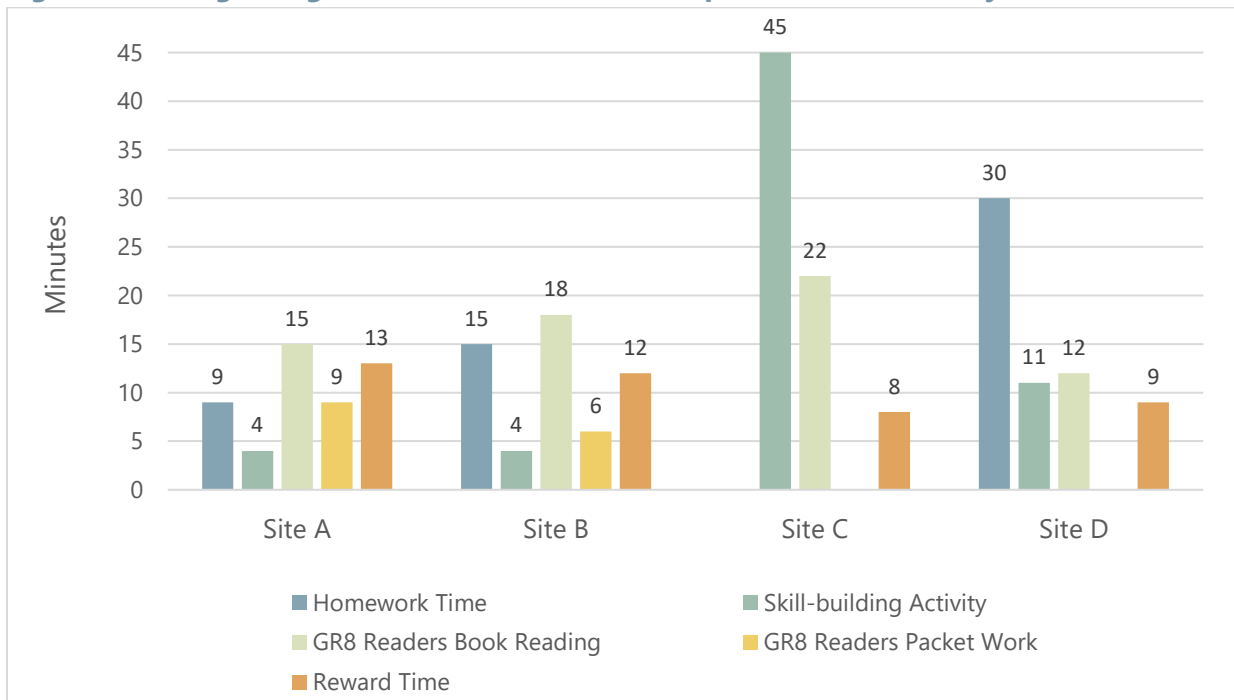
The amount of time allocated to different tutoring session components also varied between observed sessions. While the Bridge Project uses a flexible approach and the amount of time for each component should be set by the tutor-student pair based on goals, the tutoring model for grades Kindergarten through 3<sup>rd</sup> grade provides the following session guidelines to its tutors:

- Check In
- Homework or Skill Building (10 minutes)
- GR8 Readers (25-30 minutes)
- Game (preferably educational or art, as a reward, and there's time left).

Figure 7 depicts the average length in minutes of the five different components of tutoring sessions, by program site. On average, the amount of time spent on most activities varied greatly between sites, for

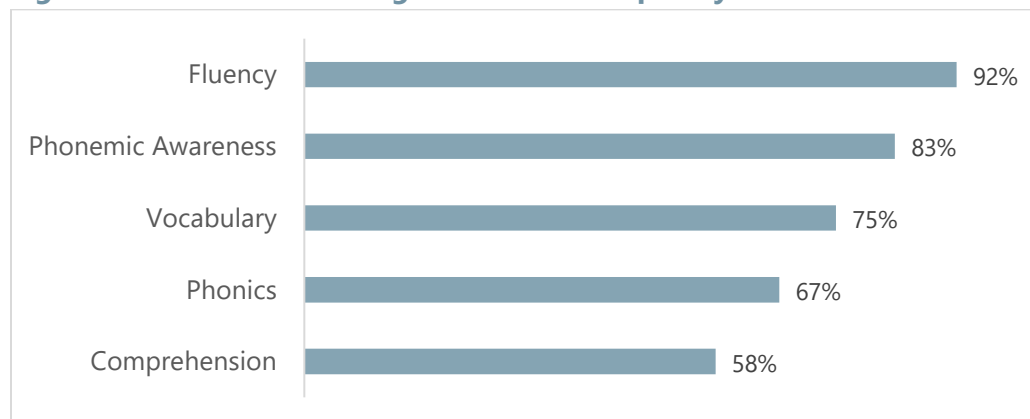
all areas except for GR8 Readers book reading. Three of the four sites included homework time during the session, with the amount of time spent ranging from zero to 30 minutes. Additionally, the length of time spent on skill building activities was relatively low for most of the sites, whereas one session at site C was spent entirely on a skill building activity. At three of the four sites, reward time was almost comparable to time spent on GR8 Readers book reading. It is worth noting that reward time was never observed to be literacy focused and generally included games such as Jenga or Legos.

**Figure 7. Average Length of Different Session Components: Variation by Site**



**Literacy Skill Areas:** The observer documented whether each tutoring session addressed each of five fundamental literacy skill areas. Figure 8 presents the percentage of sessions that included each of the five skill areas. Most tutoring sessions explicitly addressed fluency and phonemic awareness literacy skills. Vocabulary was covered in three-quarters of the observed sessions, phonics was addressed in 67%, followed by comprehension which was covered in 58% of observed sessions. The percentages shown here are similar to the previous round of observations, except for vocabulary, in which there was an increase from 27% of sessions in 2014-15 to 75% in 2015-16.

**Figure 8. Percent of Tutoring Sessions that Explicitly Addressed Each Literacy Skill**



**Tutoring Session Environment:** Each of the four program sites has a designated room with tables and chairs that serves as a tutoring and study room. Each tutoring room also includes storage for tutoring folders/materials, reference books, games, and office supplies. While each site has a designated space, there were two sessions at one site where there were too many pairs for the room, and some were required to sit on the floor in the lobby, which proved to be very distracting for the pairs with other students passing by and the lack of hard surface for writing.

While the observer primarily focused on the interactions between the tutor and the student, she also watched for factors within the tutoring environment that might interfere with the session, particularly environmental issues that served to distract students from session activities. During 11 of the 12 observations, there were events that served as distractions from the tutoring session, ranging from one to four instances per observation. The majority of distracting events were excessive noise from other students and staff that were in close proximity, the presence of materials such as markers and rulers that were within reach, or reward time games that were picked out at the beginning of the session. However, in general, students rarely became distracted from tutoring sessions to such a degree that the distraction interfered with session activities. Further, when students did become distracted, tutors were generally able to quickly redirect students' attention and keep the lesson on track.

**Student Learning and Behaviors:** During those sessions where literacy materials were covered, all students demonstrated learning of literacy skills. The majority of observed students exhibited understanding of phonics, phonemic awareness, and fluency in tutoring sessions by effectively sounding out words and reading passages quickly and fluidly. Students also demonstrated learning of vocabulary and comprehension skills through correctly answering tutors' questions, completing follow-up activities, and coming up with questions on the material themselves. Ten of the 12 observed students displayed no behavioral issues in the sessions. One student continually left the study area to walk around the room or leave the room to talk to other students and teachers. The tutor repeatedly attempted to refocus the student but the efforts did not prove to be effective.

***Instructional Skill of Tutors:*** The observer also collected data on the instructional skill of tutors. Overall, tutors provided students with level-appropriate materials, were engaged in sessions, had positive interactions with students, and generally practiced effective behavior management. Tutors showed some variability in the instructional pace they established for tutoring sessions, which was mostly driven by student need. For example, some sessions used additional time to complete homework, whereas others spent most of the time with the GR8 Readers book. There were also differences between tutors in the instructional strategies they implemented to assist, engage and challenge students. Many tutors allowed enough time for students to come to conclusions on their own, while some were quick to offer solutions. Additionally, for those tutors that encouraged the students to arrive at their own conclusions they would ask them to talk through their process, show them “proof” in the materials, or as them to think of another way to approach the problem. On numerous occasions, this strategy kept students engaged in the lesson.

### ***Tutoring Implementation Strengths and Challenges***

Programming strengths that were observed this year were that most sessions ran smoothly, students were engaged with the tutor and materials, and environmental distractions were observed infrequently. In general, this was an improvement from what was observed during the 2014-15 academic year in which student engagement and distractions were a challenge in keeping students engaged and the session running smoothly. Observation findings also highlighted an opportunity for the Bridge Project to continue improving the overall quality and consistency of its tutoring program. Recommendations based on those include helping tutors identify appropriate pace for non-GR8 Readers material and promoting the use of effective and innovative instructional strategies. It is worth noting that after the 2014-15 round of tutoring observations, discussions with Bridge staff explained that tutoring sessions are often driven by student need, which can change the structure of each session, therefore consistency can be difficult to measure. Additionally, 12 sessions observed represent only a small proportion of the tutoring sessions offered by the program and may not be representative of all sessions, and we would expect some variation.

## **Impact Study Results**

### **Research Questions**

The impact study examines both confirmatory and exploratory research questions. The original proposal included three confirmatory research questions:

4. Do more Bridge children show greater improvements in reading at or above grade level than comparison children at the end of each year and at the end of the study (binary DRA-2)?

5. Do Bridge children show greater reading gains than comparison children, within each academic year and across all years of the study (truncated DRA-2)?<sup>4</sup>
6. Do Bridge children show greater improvement in rates of school attendance than comparison children, within each academic year and across all years of the study (secondary outcome)?

The proposal also included five exploratory research questions:

1. Are more Bridge children reading at or above grade level by the end of third grade than comparison children?
2. Does the amount or type of literacy programming predict reading gains? For example, does the number of years of participation in the program predict reading gains?
3. What is the strength of the relationship between number of hours of participation and reading gains? Does this differ across program component?
4. Which literacy program activities are most closely associated to reading gains; what are the critical program elements for success?
5. Are results for grades K-3 maintained for Bridge children who reach fourth or fifth grade during the study period? Do these Bridge children show greater long-term gains in reading achievement than comparison children?

## Method

### Study Sample

The study enrolled 389 youth, collected through four cohorts of participants. However, not all the youth have literacy/reading outcome data. The following analysis was based on students for whom there was at least one DRA-2 score available over the course of the study. The final sample for analysis includes 371 study participants, 263 of whom were served by the Bridge Project, and 108 of whom were enrolled into the comparison group. Within these data, there were still missing data on some variables and not all students had complete data across all time points.

Family and child demographic data, as well as data describing the children's home environment and parental expectations, were used to better understand treatment and comparison group characteristics, assess differences between the two groups, and identify a closely matched sample that adjusts for pre-existing differences between the two groups. The DRA-2 Word Analysis (WA) Task (obtained in the fall) and DRA-2 reading scores obtained before the start of the program for the cohorts provide the baseline

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<sup>4</sup> For question 1b, we revised the analysis strategy to explore grade level equivalencies rather than conducting a truncated grade level analysis. We learned that teachers administer the full DRA-2 independent level in the spring, therefore, this truncated approach was no longer needed and was replaced with a measure of grade level discrepancy.

measure of kindergarten and 1<sup>st</sup>-3<sup>rd</sup> grade student reading skills, respectively. DRA-2 reading scores obtained at the end of the intervention years provide the follow-up measures of students' literacy skills.

## Sample Characteristics

Table 7 presents the descriptive statistics for the complete sample. The data suggest an economically disadvantaged sample, with low parent income and education, a mean family size of approximately five people, and a substantial portion (27%) using a language other than English as a primary language. Families identifying as African American comprise over one-third of the sample (39%), and families identifying as Hispanic or Latino comprise approximately half of the sample (49%). The parents report high educational goals and expectations for their children, and the means for frequency of eating dinner together, the number of books, and time spent reading with children indicate parental involvement with the children. School attendance rates are high across the baseline and follow-ups.

Most children began the study in kindergarten (41%). With few exceptions, these children have only the DRA-2 WA baseline (40%), as the DRA-2 independent reading level is not assessed until the end of the kindergarten year. Over half (57%) of the sample demonstrated proficiency on the DRA-2 baseline (N = 171), while less than half (44%) of the sample demonstrated proficiency when the DRA-2 and DRA-2 WA baseline were combined (N = 287); this indicates that fewer children are considered proficient at the beginning of kindergarten on the WA measure than on the DRA-2 end-of-prior-year assessments that are used at the higher grades.

**TABLE 7 - DESCRIPTIVE STATISTICS FOR BASELINE MEASURES: FULL SAMPLE**

Measure	N	Minimum	Maximum	Mean	SD	Data Type
Family Members	362	2	13	5.14	2.07	Ratio
Children	357	1	9	3.42	1.81	Ratio
Income	359	0	4	0.51	0.78	Ordinal
Free Lunch Eligible	317	0	1	0.98	0.15	Binary
Education	366	0	5	1.92	1.23	Ordinal
English	335	0	1	0.73	0.45	Binary
Moves	349	0	10	0.97	1.41	Ratio
Age	368	5	10	6.36	1.26	Ratio
Gender	371	0	1	0.49	0.50	Binary
African American	334	0	1	0.39	0.49	Binary
Asian American	334	0	1	0.11	0.31	Binary
White	334	0	1	0.20	0.40	Binary
Native American	334	0	1	0.04	0.21	Binary
Other Race	332	0	1	0.19	0.39	Binary
Hispanic/Latino	346	0	1	0.49	0.50	Binary
Grade	371	0	3	1.16	1.16	Ratio
Attended Preschool	327	0	1	0.67	0.47	Binary
Dinner Together	359	0	3	2.45	0.81	Ordinal
Education Goals	358	0	5	4.53	1.12	Ordinal
Education Expect	342	1	5	4.61	0.87	Ordinal
Books	338	0	300	33.34	42.04	Ratio

Measure	N	Minimum	Maximum	Mean	SD	Data Type
Read	328	0	3	1.92	0.96	Ordinal
Cohort 1	371	0	1	0.26	0.44	Binary
Cohort 2	371	0	1	0.27	0.45	Binary
Cohort 3	371	0	1	0.37	0.48	Binary
Cohort 4	371	0	1	0.09	0.29	Binary
K at Baseline	371	0	1	0.41	0.49	Binary
Grade 1 at Baseline	371	0	1	0.20	0.40	Binary
Grade 2 at Baseline	371	0	1	0.20	0.40	Binary
Grade 3 at Baseline	371	0	1	0.19	0.39	Binary
DRA-2 Baseline	171	0	1	0.57	0.50	Binary
DRA-2 Baseline + WA	287	0	1	0.44	0.50	Binary
DRA-2 1-year	315	0	1	0.57	0.50	Binary
DRA-2 2-Year	222	0	1	0.42	0.48	Binary
DRA-2 3-year	58	0	1	0.48	0.50	Binary
DRA-2 4-year	25	0	1	0.48	0.51	Binary
Has WA Baseline Only	287	0	1	0.40	0.49	Binary
School Attendance Baseline	200	0.42	1	0.91	0.10	Ratio
School Attendance 1-year	354	0.49	1	0.93	0.08	Ratio
School Attendance 2-year	283	0.14	1	0.94	0.09	Ratio
School Attendance 3-year	136	0.70	1	0.95	0.05	Ratio
School Attendance 4-year	42	0.59	1	0.94	0.07	Ratio

### Baseline Equivalence Analysis

To more fully describe the sample, we examine differences between Bridge and comparison students at baseline. The analysis identifies the extent of pre-existing group differences and the need for adjustments in subsequent analyses.

At baseline, Bridge students attended 51 different schools, and these schools served an average of five Bridge students ( $M=5.0$ , range 1-46). Students in the comparison group attended 18 different schools, and these schools served an average of approximately six comparison students ( $M=5.8$ , range 1-59). There was substantial overlap in schools between Bridge and comparison students. At the school level, 11 of the 18 schools that comparison students attended at baseline also served Bridge students. At the student level, the majority (71%) of comparison students attended schools that Bridge students also attended. The substantial overlap in schools between Bridge and comparison students, despite being recruited from separate public housing communities, is likely related to the choice system employed by DPS.

To test for differences between Bridge and comparison students, we compared group means for interval and ordinal variables and group proportions for binary variables. Table 8 lists the group means or proportions for each variable and the p-value for the t-test for differences in means or proportions. To adjust for multiple tests, we used the Holm-Bonferroni method to control the family-wise error rate. The

standardized mean difference (Cohen’s d) indicates the effect size of the group differences, with the common rule of thumb that .2 equals a small difference, .5 a medium difference, and .8 a large difference.

As expected with the design, the conditions are not equivalent at the start. Comparison of baseline means across conditions shows numerous statistically significant differences, most with small or medium effect sizes. Students in the Bridge condition seem “better off” than comparison students in some ways; they have made fewer moves ( $d = -.43$ ), and their parents have higher educational goals and expectations ( $d = .49-.52$ ). In other ways, Bridge students appear to face disadvantages relative to the comparison students; parents are less likely to speak English as their primary language ( $d = -.69$ ), have fewer books in the home ( $d = -.50$ ), and read to children less often ( $d = -.39$ ). Additionally, there are some demographic differences; the Bridge students are younger ( $d = -.55$ ), are in earlier grades ( $d = -.38$ ), and correspondingly are more likely to have the WA score as their baseline measure ( $d = .57$ ); they are also more common in Cohorts 1 and 4 ( $ds = .42-.43$ ), and less common in Cohort 3 ( $d = -.56$ ) relative to the comparison students. Additionally, Bridge students are also more likely to be Asian American than comparison students ( $d = .32$ ). Although the groups differ on numerous measures, the direction of the differences suggests little systematic bias. The mean of the d values across all measures in Table 8 is only  $-.02$ .

**TABLE 8 - DESCRIPTIVE STATISTICS AT BASELINE: FULL SAMPLE BY STUDY CONDITION**

Variable	Condition	N	Means	SD	p	d
Family Members	Comparison	99	5.01	2.24	0.453	0.08
	Bridge	263	5.19	2.01		
Children	Comparison	96	3.48	1.95	0.749	-0.04
	Bridge	261	3.41	1.76		
Income	Comparison	98	0.33	0.71	0.004	0.33
	Bridge	261	0.58	0.80		
Free Lunch Eligible	Comparison	86	1.00	0.00	0.004	-0.25
	Bridge	231	0.97	0.17		
Education	Comparison	106	2.05	1.06	0.008	-0.15
	Bridge	260	1.87	1.29		
English	Comparison	95	0.92	0.28	0.000*	-0.69
	Bridge	240	0.65	0.48		
Moves	Comparison	95	1.46	1.97	0.002*	-0.43
	Bridge	254	0.78	1.07		
Age	Comparison	105	6.84	1.26	0.000*	-0.55
	Bridge	263	6.16	1.20		
Gender	Comparison	108	0.50	0.50	0.715	-0.04
	Bridge	263	0.48	0.50		
African-American	Comparison	96	0.45	0.50	0.171	-0.16
	Bridge	238	0.37	0.48		
Asian-American	Comparison	96	0.04	0.20	0.002*	0.32
	Bridge	238	0.13	0.34		
White	Comparison	96	0.20	0.40	0.993	0.00



Variable	Condition	N	Means	SD	<i>p</i>	<i>d</i>
Native American	Bridge	238	0.20	0.40	0.032	-0.26
	Comparison	96	0.09	0.29		
Other Race	Bridge	238	0.03	0.16	0.380	0.10
	Comparison	94	0.16	0.37		
Hispanic	Bridge	238	0.20	0.40	0.247	-0.14
	Comparison	96	0.54	0.50		
Grade	Bridge	250	0.47	0.50	0.001*	-0.38
	Comparison	108	1.46	1.13		
Preschool	Bridge	263	1.03	1.14	0.063	0.25
	Comparison	75	0.57	0.50		
Dinner	Bridge	252	0.69	0.46	0.435	0.08
	Comparison	100	2.40	0.86		
Education Goals	Bridge	259	2.47	0.79	0.000*	0.52
	Comparison	101	4.07	1.52		
Education Expectations	Bridge	257	4.71	0.85	0.001*	0.49
	Comparison	88	4.25	1.20		
Books	Bridge	254	4.73	0.68	0.001*	-0.50
	Comparison	85	52.26	65.03		
Read	Bridge	253	26.99	28.16	0.001*	-0.39
	Comparison	106	2.19	0.91		
Cohort 1	Bridge	261	1.82	0.97	0.000*	0.42
	Comparison	108	0.14	0.35		
Cohort 2	Bridge	263	0.31	0.46	0.878	-0.02
	Comparison	108	0.28	0.45		
Cohort 3	Bridge	263	0.27	0.44	0.000*	-0.56
	Comparison	108	0.56	0.50		
Cohort 4	Bridge	263	0.29	0.46	0.000*	0.43
	Comparison	108	0.02	0.14		
DRA-2 Baseline	Bridge	263	0.13	0.33	0.489	0.12
	Comparison	62	0.53	0.50		
DRA-2 Baseline + WA	Bridge	109	0.59	0.49	0.539	0.08
	Comparison	79	0.47	0.50		
Has WA Baseline Only	Bridge	208	0.43	0.50	0.000*	0.57
	Comparison	79	0.22	0.41		
School Attendance Baseline	Bridge	208	0.48	0.50	0.235	0.19
	Comparison	72	0.90	0.11		
School Attendance Baseline	Bridge	128	0.92	0.10		
	Comparison	72	0.90	0.11		

*Note:* Statistical significance (indicated by \*) was determined using the Holm-Bonferroni Method to account for multiple comparisons. Using this method, *p*-values of .004 and greater were not considered significant.

### Propensity Score Matching

The differences between students in the two conditions require some form of adjustment. Controlling for baseline covariates in multiple regression models offers one approach. By including all students,

however, the adjustments are strongly influenced by non-comparable extremes in each group. The alternative approach of propensity score matching identifies a subset of sample respondents in each condition who are most alike. The matching assumes all relevant differences between conditions are measured at baseline and limits the analysis by the loss of students and statistical power. Still, it has clear advantages in internal validity over use of all students.

We conducted propensity score matching using logistic regression for the outcome of Bridge (1) versus comparison (0) students with a nearest neighbor algorithm, no replacement, and one-to-one matches. The procedure uses the logistic regression predicted probabilities of belonging to the treatment group (i.e., propensity scores) for each subject. To improve the matching, we added two restrictions: cases were matched only if, first, they fell within the region of common support and, second, the caliper (or propensity score distance) for a match was less than or equal to .20 standard deviations. The propensity score matching was done with PSMATCHING3 in SPSS v. 21.

All of the baseline measures listed in Table 8 were initially considered as predictors. These included measures of parental education and parental expectations for their children's academic success, as these have been linked in previous research to children's academic achievement (Child Trends Data Bank, 2012a; 2012b). These also included ethnic and racial identifiers, as research has shown ethnic and racial disparities in educational achievement (Hemphill & Vanneman, 2011; Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009). Additionally, data obtained from the Denver Housing Authority indicated that there may be differences between Bridge and comparison neighborhoods with respect to mobility, so a measure of mobility was also included. Finally, descriptive indicators of study involvement (i.e., cohort) were included to control for any unintended differences in recruitment from year to year.

The first model, which considered all of these baseline measures, resulted in an n of 61 (just 16% of the sample) due to missing data across the many measures. Therefore, in order to increase sample size, measures needed to be removed as predictors. To determine which measures could be removed while limiting the loss of accuracy in propensity score matching, a number of steps were used. First, correlations greater than .80 were identified among all measures, and the measure with the higher level of missing data was removed. Such high correlations indicate that these measures would be capturing similar sources of variance, and the benefit of improving sample size would offset anything lost by excluding those measures. Second, the remaining measures with 10% or more missing data that also demonstrated significant mean differences between Bridge and comparison students were identified, and dummy variables that represented missingness (1=missing, 0=not missing) for those measures were included in the model as well. The resulting propensity score model yielded 120 matched cases (60 in each condition).<sup>5</sup>

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<sup>5</sup> Two alternative approaches were used to generate a matched sample. First, the same matching procedure described above was used, but mean replacement of missing values was used for those measures with 10% or more missing data and with a mean difference between Bridge and comparison students. The resulting propensity

Table 9 presents tests for baseline equivalence for the subsample of 120 students. Given missing data, the tests often rely on fewer cases. Based on the results, the matched sample appears relatively well balanced; the only statistically significant differences are in parental educational expectations, with Bridge students' parents with higher educational expectations ( $d = .64$ ), and in the proportion of the sample drawn from Cohort 3, with fewer Bridge than comparison students in the matched sample from Cohort 3 ( $d = -.82$ ). Several other measures show  $d$  values in the medium range but are not statistically different; the Bridge group speaks English less often ( $d = -.49$ ), is younger ( $d = -.42$ ), and has higher educational goals ( $d = .47$ ).

**TABLE 9 - DESCRIPTIVE STATISTICS AT BASELINE: MATCHED SAMPLE**

Variable	Condition	N	Mean	SD	<i>p</i>	<i>d</i>
Family Members	Comparison	60	4.88	1.83	0.231	0.22
	Bridge	60	5.30	1.96		
Children	Comparison	58	3.52	1.73	0.797	0.05
	Bridge	60	3.60	1.75		
Income	Comparison	57	0.40	0.86	0.146	0.27
	Bridge	60	0.65	0.95		
Free Lunch Eligible	Comparison	46	0.00	0.00	0.159	0.27
	Bridge	57	0.04	0.19		
Education	Comparison	60	2.08	0.94	0.206	-0.23
	Bridge	60	1.83	1.20		
English	Comparison	51	0.90	0.30	0.013	-0.49
	Bridge	56	0.71	0.46		
Moves	Comparison	60	1.10	1.46	0.486	-0.13
	Bridge	60	0.93	1.13		
Age	Comparison	60	6.82	1.14	0.024	-0.42
	Bridge	60	6.33	1.17		
Gender	Comparison	60	0.55	0.50	0.204	-0.23
	Bridge	60	0.43	0.50		
African-American	Comparison	53	0.30	0.46	0.726	0.07
	Bridge	57	0.33	0.48		
Asian-American	Comparison	53	0.02	0.14	0.349	0.18
	Bridge	57	0.05	0.23		
White	Comparison	53	0.28	0.45	0.382	-0.17

score model yielded 110 matched cases (55 in each condition) with two significant mean differences between Bridge and comparison students (using the Holm-Bonferroni correction) on baseline measures for this subsample; given that the two samples appeared to be equally well-matched, the larger matched sample was retained. Second, the same matching procedure described above was used, but the model dropped those measures with 10% or more missing data and with a mean difference between Bridge and comparison students. The resulting propensity score model yielded 128 matched cases (64 in each condition) with five significant mean differences between Bridge and comparison students (using the Holm-Bonferroni correction) on baseline measures for this subsample; therefore, the smaller but better-matched sample was retained.

Variable	Condition	N	Mean	SD	p	d
	Bridge	57	0.21	0.41		
Native American	Comparison	53	0.08	0.27	0.158	-0.28
	Bridge	57	0.02	0.13		
Other Race	Comparison	53	0.17	0.38	0.591	0.10
	Bridge	57	0.21	0.41		
Hispanic	Comparison	56	0.66	0.48	0.122	-0.29
	Bridge	58	0.52	0.50		
Grade	Comparison	60	1.48	1.11	0.299	-0.19
	Bridge	60	1.27	1.16		
Preschool	Comparison	44	0.61	0.49	0.147	0.29
	Bridge	60	0.75	0.44		
Dinner	Comparison	60	2.48	0.72	0.494	-0.13
	Bridge	60	2.38	0.87		
Education Goals	Comparison	59	4.19	1.35	0.013	0.47
	Bridge	58	4.71	0.82		
Education Expect	Comparison	52	4.06	1.26	0.001*	0.64
	Bridge	58	4.72	0.74		
Books	Comparison	60	37.83	37.68	0.966	-0.01
	Bridge	60	37.55	34.10		
Read	Comparison	60	2.13	0.95	0.779	-0.05
	Bridge	60	2.08	1.00		
Cohort 1	Comparison	60	0.23	0.43	0.076	0.33
	Bridge	60	0.38	0.49		
Cohort 2	Comparison	60	0.22	0.42	0.107	0.30
	Bridge	60	0.35	0.48		
Cohort 3	Comparison	60	0.55	0.50	0.000*	-0.82
	Bridge	60	0.18	0.39		
Cohort 4	Comparison	60	0.00	0.00	0.024	0.42
	Bridge	60	0.08	0.28		
DRA-2 Baseline	Comparison	36	0.44	0.50	0.130	0.38
	Bridge	30	0.63	0.49		
DRA-2 Baseline + WA	Comparison	46	0.39	0.49	0.654	0.09
	Bridge	48	0.44	0.50		
Has WA Baseline Only	Comparison	46	0.22	0.42	0.096	0.35
	Bridge	48	0.38	0.49		
School Attendance Baseline	Comparison	36	0.89	0.11	0.634	0.12
	Bridge	27	0.91	0.11		

*Note:* Statistical significance (indicated by \*) was determined using the Holm-Bonferroni Method to account for multiple comparisons. Using this method, *p*-values of .004 and greater were not considered significant.

### Differential Attrition and Missing Data Analysis

The sample contains substantial missing data due to attrition, non-response to survey items, and inability to match students with school records. Other gaps in data result from the timing of the surveys.

Given their later entrance into the study, Cohort 4 students have data for the 1-year follow-up, but are missing data for the 2-year, 3-year, and 4-year follow-ups. Cohort 3 students have data for the 1-year and 2-year follow-ups but are missing the 3-year and 4-year follow-ups. Cohort 2 students have data for the 1-year, 2-year, and 3-year follow-ups but are missing the 4-year follow-up. Cohort 1 students have data for all the follow-ups, but are missing baseline school attendance data, as these data were not available before the start of the study.

Table 10 presents figures on the completeness of data for the DRA-2 reading and school attendance outcome measures. The values in Table 10 represent the proportion of missing data, and only include participants that are eligible for each follow-up (e.g., only Cohort 1 participants are included in the calculations of attrition for the 4-year follow-up). Of the 371 participants, the DRA-2 baseline scores were missing for 54% but the combined DRA-2 + WA scores were missing for 23% of the full sample. The follow-up DRA-2 scores were missing relatively little data at 1-year (15%), but the amount of missing data naturally increases at the later follow-ups, to 34% at the 2-year follow-up, 71% at the 3-year follow-up, and 74% at the 4-year follow-up for the full sample. Values for the matched sample show slightly smaller proportions of missing data at each of the follow-ups.

The next columns in Table 10 examine missing data for the 262 students with the DRA-2 + WA baseline. The figures are important for models including the baseline measure as a predictor of the follow-up measures. The proportions missing are generally lower for this subsample, with the exception of the 2-year and 3-year follow-up attendance data, where missing data rates are slightly higher.

**TABLE 10 - PROPORTIONS OF MISSING DATA**

	With or Without Pretest		Students with DRA-2 + WA Pretest	
	Full Sample	Matched Sample	Full Sample	Matched Sample
DRA-2 Baseline	0.54	0.45	0.40	0.30
Baseline + WA	0.23	0.22	0.00	0.00
DRA-2 1-year	0.15	0.13	0.08	0.07
DRA-2 2-Year	0.34	0.30	0.31	0.32
DRA-2 3-year	0.71	0.68	0.63	0.61
DRA-2 4-year	0.74	0.76	0.74	0.78
School Attendance Baseline	0.27	0.24	0.00	0.00
School Attendance 1-year	0.05	0.03	0.03	0.00
School Attendance 2-Year	0.16	0.10	0.17	0.15
School Attendance 3-year	0.31	0.25	0.41	0.38
School Attendance 4-year	0.57	0.41	-	-

Differential attrition was tested in two steps. First, to examine baseline differences between those with complete and missing data at each follow-up, we correlated the baseline measures listed in Table 9 with measures equal to 1 for those without DRA-2 outcome data at each follow-up and equal to 0 for those with DRA-2 outcome data. The four measures of DRA-2 missingness for each of the follow-ups and the

30 baseline measures produce 111 valid correlations<sup>6</sup>, 21 of which were significant at the .05 level; using the Holm-Bonferroni method to correct for multiple comparisons, only four were significant. These findings point to minimal differences in attrition.

Second, the more complete test of differential attrition comes from tests for the interaction, or product term, of condition by the baseline measure in predicting missingness. For attrition to bias tests for program impact, attrition related to baseline characteristics must also differ by condition. We therefore estimated 21 such logistic regression models, using the less conservative benchmark of  $p < .05$  to probe for possible differences in attrition. Results suggest that there are two baseline measures which differ in missingness between conditions: Bridge students in Cohort 3 were more likely to drop out at the 2-year follow-up than comparison students in Cohort 3 ( $p = .044$ ); and Bridge students with low school attendance were more likely to be missing data at the 2-year follow-up than comparison students with low school attendance ( $p = .028$ ). However, using the Holm-Bonferroni adjustment, neither of these findings are considered statistically significant.

Among the matched sample, 14 of 111 correlations reached statistical significance, again using the less conservative benchmark of  $p < .05$ ; using the Holm-Bonferroni method to correct for multiple comparisons, only three were significant. Further, none of the interaction terms in the subsequent logistic regression models to probe for possible differences in attrition was significant using the  $p < .05$  benchmark. Overall, given the numerous baseline characteristics, the tests for differential attrition do not indicate a systematic problem. The influence of being a member of Cohort 3 and school attendance are considered as control variables in analyses of the full sample that follow, but attrition is viewed more as a problem of sample size and generalizability than a threat to the internal validity of the program evaluation.

## Power Analysis

The maximum sample size for the full sample at the 1-year follow-up is 332 (102 comparison, 230 treatment), but only 250 have both baseline and posttest data for DRA-2 proficiency (73 comparison, 177 treatment), and only 195 have both baseline and 1-year follow-up data for school attendance (70 for comparison, 125 for treatment). The matched sample has a maximum sample size of 120 (60 each for the comparison and treatment).

Power analyses with power of .80 and an alpha level of .05 indicate minimal detectable effect sizes (Cohen's  $d$ ) ranging from .33-.42 for these sample sizes with a standard regression model. This indicates that the data have the potential to identify small-to-medium effect sizes. To translate the effect sizes into odds ratios appropriate for logistic regression, we use the standard formula of  $OR = \text{exponent}(1.81*d)$ . The small-to-medium standardized effect sizes of .33-.42 correspond to odds ratios of 1.82-

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<sup>6</sup> Of the 120 possible correlations, nine were not calculated because at least one of the variables was constant (e.g., all of Cohort 4 is missing 2-year, 3-year, and 4-year follow-up data).

2.13. For the matched sample, power analyses indicate minimal detectable effect size of .52 – a medium effect size. The corresponding odds ratio is 2.56.

### Descriptive Outcomes

Preliminary descriptive analyses were conducted to examine mean levels of DRA-2 proficiency and school attendance at baseline and follow-ups. The top panel of Table 11 lists descriptive statistics for the DRA-2 reading proficiency figures at baseline and the 1-year and 2-year follow-ups for the full sample. There were too few cases for analysis of DRA-2 proficiency at the 3-year follow-up (Comparison n = 6; Bridge n = 46) and the 4-year follow-up (Comparison n = 4; Bridge n = 18). The bottom panel of Table 11 lists descriptive statistics for the school attendance rates at baseline and the 1-year and 2-year follow-ups for the full sample. Once again, there were too few cases for analyses of school attendance at the 3-year follow-up (Comparison n = 20; Bridge n = 17) and there were no data for the 4-year follow-up.

The outcome measures for the DRA-2 indicate whether the student is rated proficient (equal to 1) or not (equal to 0). The baseline scores combine the Word Analysis (WA) proficiency score for those in kindergarten with the DRA-2 proficiency score for those in grades 1-3 at the program start. The use of the same scale by the DRA-2 and WA measures – proficient or not – allows for the combination across these measures. The table examines students with both baseline and follow-up scores.

The 1-year follow-up means and associated effect sizes in Table 11 for DRA-2 reading proficiency suggest that Bridge students fare better over time than comparison students. At baseline, Bridge students score lower than comparison students (41% proficient versus 51% proficient, respectively;  $d = -.20$ ), while at follow-up, Bridge students score better than comparison students (61% proficient versus 52% proficient, respectively;  $d = .18$ ). A small amount of growth occurs among Bridge students during the first year (change =  $.20$ ), while little change occurs among comparison students (change =  $.01$ ), and this difference is statistically significant ( $p < .05$ ). These differences appear to persist at the 2-year follow-up. After two years, Bridge students continue to score better than comparison students on average (49% proficient versus 33% proficient, respectively;  $d = .33$ ). Additionally, at two years the Bridge students again show greater positive change (change =  $.09$ ) than comparison students (change =  $-.18$ ), and this difference in change scores is statistically significant ( $p < .05$ ).

**TABLE 11 - BASELINE AND FOLLOW-UP OUTCOMES: FULL SAMPLE**

		DRA-2 Proficiency						Sig
		Baseline (DRA-2 + WA)		Follow-up		Change		
		Comp	Bridge	Comp	Bridge	Comp	Bridge	
<b>1-year follow-up (Cohorts 1-4)</b>	N	73	189	73	189			
	Mean	0.51	0.41	0.52	0.61	0.01	0.20	**
	SD	0.50	0.49	0.50	0.49			
	d		-0.20		0.18			
<b>2-Year follow-up (Cohorts 1-3)</b>	N	55	123	55	123			
	Mean	0.51	0.40	0.33	0.49	-0.18	0.09	**

		SD	0.50	0.49	0.47	0.50		
		d		-0.22		0.33		
<b>School Attendance</b>								
		Baseline		Follow-up		Change		Sig
		Comp	Bridge	Comp	Bridge	Comp	Bridge	
<b>1-year follow-up (Cohorts 2-4)</b>	N	70	125	70	125			
	Mean	0.90	0.92	0.91	0.94	0.01	0.02	
	SD	0.11	0.09	0.10	0.07			
		d		0.20		0.35		
<b>2-Year follow-up (Cohorts 2-4)</b>	N	66	75	66	75			
	Mean	0.91	0.94	0.92	0.95	0.01	0.01	
	SD	0.10	0.07	0.08	0.06			
		d		0.35		0.43		

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

The results for school attendance with the full sample do not reveal any significant differences between Bridge and comparison students, as there is no significant difference in the change in school attendance from baseline to first-year or second-year follow-up among either group. For both Bridge and comparison students, school attendance appears to stay relatively stable on average.

Table 12 lists descriptive statistics for the DRA-2 reading proficiency figures at baseline and the 1-year and 2-year follow-ups for the matched sample. Once again, there were too few cases for analysis of DRA-2 proficiency at the 3-year follow-up (Comparison  $n = 5$ ; Bridge  $n = 9$ ) and there were no comparison students in the 4-year follow-up. Likewise, there were too few cases for analyses of school attendance at the 3-year follow-up (Comparison  $n = 11$ ; Bridge  $n = 4$ ) and there were no data for the 4-year follow-up.

Results with the matched sample indicate greater improvement for Bridge than comparison students in DRA-2 proficiency, particularly by the 2-year follow-up. At baseline, comparison students score slightly lower than Bridge students (42% proficient versus 45% proficient, respectively;  $d = .07$ ). At the 1-year follow-up, the Bridge students score better than the comparison students (59% proficient versus 49% proficient, respectively;  $d = .20$ ), although this difference is not statistically significant. However, by the 2-year follow-up, the Bridge students continue to score better than the comparison students (48% proficient versus 25% proficient, respectively;  $d = .49$ ), and the difference in change scores is statistically significant ( $p < .05$ ).

**TABLE 12 - BASELINE AND FOLLOW-UP OUTCOMES: MATCHED SAMPLE**

		<b>DRA-2 Proficiency</b>						
		Baseline (DRA-2 +WA)		Follow-up		Change		Sig
		Comp	Bridge	Comp	Bridge	Comp	Bridge	
<b>1-year follow-up (Cohorts 1-4)</b>	N	43	44	43	44			
	Mean	0.42	0.45	0.49	0.59	0.07	0.14	
	SD	0.50	0.50	0.51	0.50			



	d		0.07		0.20			
<b>2-Year follow-up (Cohorts 1-3)</b>	N	32	29	32	29			
	Mean	0.44	0.38	0.25	0.48	-0.13	0.10	**
	SD	0.50	0.49	0.44	0.51			
	d		-0.12		0.49			
<b>School Attendance</b>								
		<b>Baseline</b>		<b>Follow-up</b>		<b>Change</b>		<b>Sig</b>
		<b>Comp</b>	<b>Bridge</b>	<b>Comp</b>	<b>Bridge</b>	<b>Comp</b>	<b>Bridge</b>	
<b>1-year follow-up (Cohorts 2-4)</b>	N	36	27	36	27			
	Mean	0.89	0.91	0.91	0.94	0.02	0.03	
	SD	0.11	0.11	0.07	0.08			
	d		0.12		0.32			
<b>2-Year follow-up (Cohorts 2-4)</b>	N	34	17	34	17			
	Mean	0.90	0.92	0.93	0.93	0.03	0.01	
	SD	0.11	0.05	0.05	0.08			
	D		0.30		0.01			

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

The results for school attendance with the matched sample do not indicate any significant differences between Bridge and comparison students, as there is no significant difference in the change in school attendance from baseline to first-year or second-year follow-up among either group. For both Bridge and comparison Bridge students, school attendance appears to stay relatively stable on average.

## Multiple Regression Analyses

To examine the confirmatory research questions of interest, multiple regression analyses were conducted. Specifically, we estimated logistic regression models for the binary DRA-2 proficiency measure, and linear regression models for school attendance rate. To help interpret the size of the effects, the tables present odds ratios for the logistic regressions and standardized coefficients for the linear regressions. We estimated separate models for each of the follow-ups, where there was a sufficient sample size to do so. Analyses were conducted in Mplus using full information maximum likelihood (FIML) to account for missing data. FIML uses a latent variable approach to handle missing data in endogenous variables (i.e., independent variables) within the analysis model, which results in all possible cases (i.e., all those with an outcome variable) being used for estimation. As a result, FIML is a more powerful estimation model than list-wise deletion approaches because it results in a larger sample size and is less biased by patterns of attrition. In Mplus, logistic regressions were conducted using maximum likelihood estimation with robust standard errors, which adjusts estimates to account for non-normally distributed data. Prior to the analyses we considered two statistical concerns that accompany the quasi-experimental design of the Bridge Project: (1) clustering of the sample, and (2) non-randomized assignment across conditions.

With respect to the clustering of the sample, the students are clustered within housing complexes, which are the primary basis for assignment to the treatment group. As described earlier, assignment to the treatment is dependent on the housing location of students, such that assignment is based on

groups rather than individuals. Therefore, we considered whether it was necessary to account for variation in the outcome across units of assignment via mixed-effects models by examining the distribution of variance in the outcomes. ANOVA tests show that the housing complex in which the parents and child live accounts for less than 5% of variance in either DRA-2 proficiency or school attendance rates, indicating that a mixed-effect model approach is not necessary. Clustering does not appear to bias estimation of the standard errors.

Second, as demonstrated in preceding sections on baseline equivalence, the non-randomized assignment means the treatment and comparison groups are not equivalent before the start of the treatment. The simplest adjustment is to control for baseline characteristics that differ across groups. Of all the measures that differ across condition or are affected by attrition for the full sample, five are related independently to the DRA-2 outcome and therefore may confound the effects of the treatment: age ( $p = .004$ ), grade ( $p = .005$ ), whether the DRA-2 WA is used ( $p < .001$ ), and speaking English at home ( $p = .049$ ) at baseline. Of note, three of these measures are highly interrelated; age is highly related to grade, and students in Kindergarten at baseline have the DRA-2 WA score as their baseline measure. For school attendance, the only significant baseline measure is number of moves ( $p < .001$ ). The models for the full sample therefore include all these covariates and should help minimize potential confounding.

In addition, as described earlier, the more stringent and complex form of control involves propensity score matching. We replicate the impact models for the subsample of 120 matched cases, sacrificing sample size and power for equivalence across conditions. The baseline difference between the paired sample in number of moves prior to baseline is included as a covariate to account for possible confounding effects. For both the full and matched samples, several of these models are limited by a small number of cases for longer follow-ups. In those cases, analyses are not conducted.

## Effects of Bridge Program on Outcomes

Table 13 presents results from multiple regression models at the 1-year, 2-year, and 3-year follow-ups for the full sample. There were too few cases for reliable analysis of DRA-2 proficiency ( $N = 24$ ) and school attendance ( $N = 42$ ) at the 4-year follow-up.

Results indicate that at the 1-year follow-up, Bridge students were not statistically more likely than comparison students to be proficient on the DRA-2. At the 2-year follow-up, Bridge students were more likely to be proficient on the DRA-2 than comparison students ( $OR = 2.32, p < .05$ ). At the 3-year follow-up, Bridge students were marginally more likely to be proficient on the DRA-2 than comparison students ( $OR = 5.95, p < .10$ ). As expected, baseline proficiency levels were positively related to DRA-2 proficiency at all follow-ups. With respect to the covariates, speaking English at home and age were negatively related to DRA-2 proficiency at the 1-year follow-up, and grade and having a DRA-2 WA as a baseline score were positively related to DRA-2 proficiency at the 1-year follow-up. At the 2-year follow-up, only speaking English at home continued to be negatively related to DRA-2 proficiency. At the 3-year follow-up, no other covariates were related to DRA-2 proficiency. The negative relation between speaking English at home and DRA-2 proficiency was unexpected, but replicated in post-hoc analyses, where

students whose parents reported speaking English as their primary language had lower average levels of proficiency at the 1-year and 2-year follow-ups ( $p < .05$ )

**TABLE 13 - EFFECTS OF BRIDGE PROGRAM ON OUTCOMES: FULL SAMPLE**

<b>DRA-2 Proficiency Logistic Regression</b>									
<b>Predictors</b>	<b>1-year follow-up</b>			<b>2-year follow-up</b>			<b>3-year follow-up</b>		
	<b>B</b>	<b>OR</b>	<b>Sig</b>	<b>B</b>	<b>OR</b>	<b>Sig</b>	<b>B</b>	<b>OR</b>	<b>Sig</b>
DRA-2 + WA Baseline	0.60	21.08	***	0.49	8.71	***	0.40	6.95	***
Bridge	-0.04	0.81		0.17	2.32	**	0.33	5.95	*
English	-0.12	0.51	*	-0.17	0.44	**	-0.09	0.62	
Age	-0.38	0.46	**	0.07	1.13		-0.33	0.53	
Grade	0.40	2.38	**	-0.21	0.68		0.06	1.12	
Baseline+WA	0.56	18.50	***	0.04	1.20		0.13	1.92	
Constant	-0.96			0.79			-0.47		
R <sup>2</sup>	0.49			0.32			0.45		
N	315			222			58		

<b>School Attendance Linear Regression</b>									
<b>Predictors</b>	<b>1-year follow-up</b>			<b>2-year follow-up</b>			<b>3-year follow-up</b>		
	<b>b</b>	<b>beta</b>	<b>Sig</b>	<b>b</b>	<b>beta</b>	<b>Sig</b>	<b>b</b>	<b>beta</b>	<b>Sig</b>
School Attendance Baseline	0.51	0.62	***	0.59	0.71	***	0.22	0.43	***
Bridge	0.00	0.04		0.00	0.12		0.01	0.05	
Moves	-0.02	-0.29	***	-0.01	-0.34	***	-0.00	-0.09	
Constant	0.48			0.40			0.74		
R <sup>2</sup>	0.56			0.57			0.22		
N	354			283			136		

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

Results also indicate that Bridge and comparison students did not differ in school attendance levels at any of the follow-ups. As expected, school attendance at baseline was positively related to school attendance at all follow-ups; additionally, the number of moves was negatively related to school attendance at the 1-year and 2-year follow-ups, but not the 3-year follow-up.

Table 14 presents results from multiple regression models at the 1-year and 2-year follow-ups for the matched sample. There were too few cases for reliable analysis of DRA-2 proficiency or school attendance at the 3-year ( $Ns = 23$  and  $53$ , respectively) or 4-year ( $Ns = 9$  and  $22$ , respectively) follow-ups for the matched sample. Results indicate that there were no significant differences between Bridge and comparison students for DRA-2 proficiency at the 1-year follow-up, but Bridge students were more likely to be proficient than comparison students among the matched sample at the 2-year follow-up ( $OR=4.57$ ,  $p < .05$ ).

**TABLE 14 - EFFECTS OF BRIDGE PROGRAM ON OUTCOMES: MATCHED SAMPLE**

<b>DRA-2 Proficiency Logistic Regression</b>						
<b>Predictors</b>	<b>1-year follow-up</b>			<b>2-year follow-up</b>		
	<b>b</b>	<b>OR</b>	<b>Sig</b>	<b>b</b>	<b>OR</b>	<b>Sig</b>

DRA-2 + WA Baseline	0.46	7.01	***	0.45	8.67	***
Bridge	0.15	1.88		0.32	4.57	**
Education Expectation	-0.01	0.97		0.27	1.13	*
Constant	0.58			2.13		
R <sup>2</sup>	.25			.42		
N	105			81		
School Attendance Linear Regression						
Predictors	1-year follow-up			2-year follow-up		
	b	beta	Sig	b	beta	Sig
Attendance Baseline	0.39	0.54	***	0.62	0.82	***
Bridge	0.01	0.05		0.00	0.01	
Education Expectation	-0.01	-0.10		0.00	0.01	
Cohort 3	-0.00	-0.02		0.02	0.12	
Constant	0.60			0.35	3.67	
R <sup>2</sup>	0.33			0.67		
N	117			104		

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

With respect to covariates, parental education expectations were positively related to DRA-2 proficiency at the 2-year follow-up. There were no significant differences in school attendance between Bridge and comparison students at either the 1-year or 2-year follow-ups. Baseline school attendance was positively related to school attendance at both the 1-year and 2-year follow-ups, and none of the other covariates were significant.

## Linear Growth, Mixed-Effects Models

The separate analysis of each follow-up ignores trajectories over time for students with multiple data points and fails to account for correlated errors across equations (i.e., does not account for the fact that, for the most part, the same students are contributing to the estimates in each model). A linear growth, mixed-effects (or multi-level) model incorporates long-term change by pooling data from the baseline and the four follow-ups. This has the additional advantage of using data from the third and fourth follow-ups, for which there is too small a sample size at each follow-up to model independently. The mixed-effects model treats time at level 1 and persons at level 2, with time nested within persons. By assuming a linear trajectory in outcomes over time, the model has the advantages of increasing the sample size and allowing use of students with partially complete data. The mixed-effects estimation adjusts for potential problems of clustering and heteroscedasticity that otherwise would bias estimates of the standard errors.

Table 15 lists the model coefficients for the mixed-effects models. Note that the models add a measure of wave (0 through 4, corresponding to the baseline and each follow-up) and a wave-by-treatment interaction term to capture the growth in the outcomes. To adjust for the baseline differences across conditions, the models also include a baseline outcome control and the covariates used in the previous multiple regression models, which are constant across the waves.

The mixed-effects models provide evidence of Bridge effectiveness for DRA-2 proficiency. The Bridge-by-wave growth term is statistically significant ( $p < .01$ ) for DRA-2 proficiency, indicating that change in proficiency over time differs between Bridge and comparison students. Probing this interaction by examining simple slopes indicates that the likelihood of being proficient increases significantly among Bridge students over time ( $b = .06$ ,  $SE = .02$ ,  $p = .003$ ), while the likelihood of being proficient decreases significantly among comparison students ( $b = -.09$ ,  $SE = .03$ ,  $p = .001$ ).

Results for the matched sample indicate a similar trend; the Bridge-by-wave growth term is statistically significant ( $p < .05$ ), indicating that change in proficiency over time differs between Bridge and comparison students in the matched sample as well. Probing of these simple slopes indicate that the likelihood of being proficient increases marginally among Bridge matched students over time ( $b = .07$ ,  $SE = .04$ ,  $p = .08$ ), while the likelihood of being proficient remains stable for comparison matched students over time ( $b = -.06$ ,  $SE = .04$ ,  $p = .17$ ).

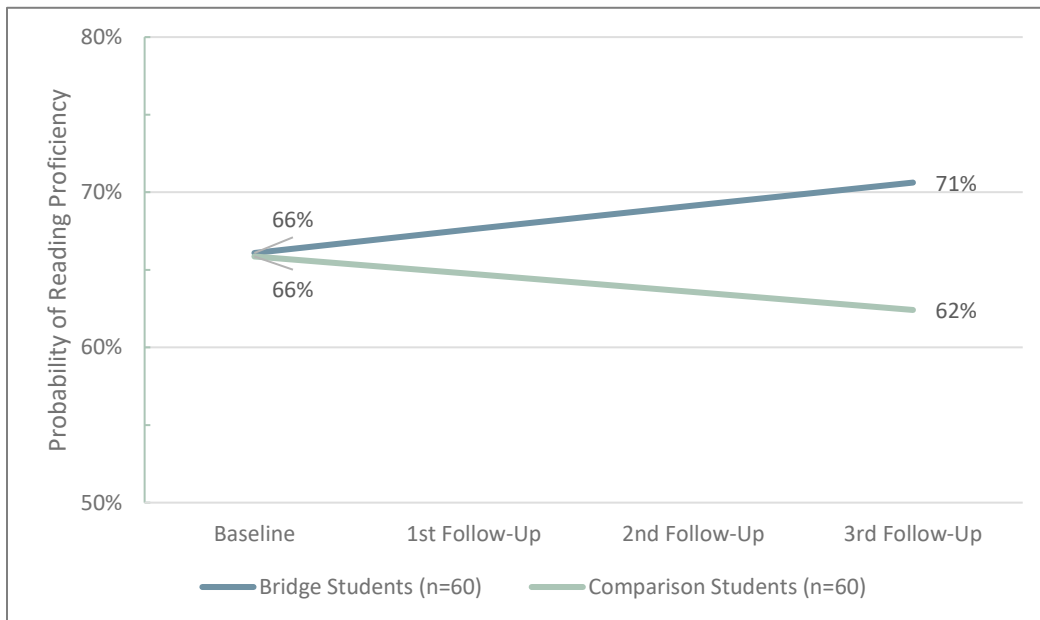
**TABLE 15 - EFFECTS OF BRIDGE PROGRAM ON OUTCOMES: MIXED-EFFECTS MODELS**

Full Sample		
	DRA-2 Proficiency	School Attendance
Intercept	0.36	0.29
Bridge	-0.06***	-0.00
Wave	-0.09***	0.00
Bridge*Wave	0.15***	0.01
DRA-2	0.78***	-
English	-0.04*	-
Age	-0.04	-
Grade	0.02	-
Baseline+WA	0.12***	-
Attendance Base	-	0.70**
Move	-	-0.02*
N	335	362
Matched Sample		
	DRA-2 Proficiency	School Attendance
Intercept	0.07	0.40
Bridge	0.01	0.00
Wave	-0.05	0.01**
Bridge*Wave	0.12**	0.00
DRA-2	0.77***	-
Education Expectation	0.01	-
Cohort 3	0.37	-
Attendance Base	-	0.57***
Move	-	-0.01

N	117	120
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\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

As shown in Figure 9, the probability that Bridge and comparison students are proficient on the DRA-2 at baseline is equal; however, by the end of the third year of programming, a Bridge student has a 71% chance of being proficient, while a matched comparison student has a 62% chance of being proficient.



Note: The difference in slopes between the matched Bridge and comparison groups was statistically significant

For school attendance, the Bridge-by-wave growth term is not statistically significant for either the full or matched sample. For the matched sample there is a main effect of wave, indicating that school attendance rates increased on average over time, but there does not appear to be a difference between Bridge and comparison students in this growth.

### Deidentified Data

Given that recruitment for the study did not reach initial benchmarks, resulting in a somewhat smaller sample size than originally anticipated, OMNI explored an additional research design using de-identified student data. For this process, OMNI identified the four most common home schools for Bridge students; among these four schools, 98 Bridge students were in school attendance (School 1 n = 33; School 2 n = 20; School 3 n = 27; School 4 n = 18). OMNI requested data from these schools for non-Bridge students in grades K-3. This request resulted in data for a non-Bridge sample of 597 students (School 1 n = 155; School 2 n = 154; School 3 n = 85; School 4 n = 203). For these students, DRA-2 and school attendance data from the 2014-15 school year served as the baseline, and data from the 2015-16

school year served as the 1-year follow-up. Due to restrictions from the school district, no demographic information other than grade could be collected for these students.

Analysis of the deidentified sample once again raised concerns about the clustering of students, since the sample came intentionally from four specific schools. Therefore, we considered whether it was necessary to account for systematic variation in the outcome across schools via mixed models. However, ANOVA tests show that school accounted for less than 2% of variance in either DRA-2 proficiency or school attendance rates, indicating that a mixed model approach was not necessary. Clustering by schools likely does not bias estimation of the standard errors.

The first set of analyses compared change in DRA-2 proficiency and school attendance from the 2014-15 school year to the 2015-16 school year between Bridge and comparison students. Although previous tests indicated that schools do not account for a significant level of variance in either outcome, thus eliminating the need for mixed models, it is also important to consider whether there are mean differences between schools at baseline. Mean levels of DRA-2 proficiency and school attendance rates at baseline for each school are presented in Table 16. There were no significant differences among schools in baseline DRA-2 proficiency levels. For school attendance, School 2 had significantly lower rates than School 1 ( $p < .001$ ) and School 4 ( $p = .001$ ). Therefore, school was included as a covariate in subsequent school attendance analyses to control for mean differences using a series of three dummy-coded variables.

**TABLE 16 - DESCRIPTIVE STATISTICS BY SCHOOL AT BASELINE: DEIDENTIFIED SAMPLE**

Variable	School	N	Mean	SD
DRA-2 Baseline	School 1	128	0.64	0.48
	School 2	116	0.51	0.50
	School 3	62	0.56	0.50
	School 4	146	0.58	0.50
School Attendance Baseline	School 1	137	0.94	0.07
	School 2	123	0.89	0.09
	School 3	83	0.91	0.12
	School 4	163	0.93	0.06

Next, mean differences between Bridge and comparison students at baseline were examined to determine whether the samples were systematically different from the outset. As shown in Table 17, there were no significant differences between Bridge and comparison students in either baseline DRA-2 baseline proficiency levels or attendance rates.

**TABLE 17 - DESCRIPTIVE STATISTICS BY CONDITION AT BASELINE: DEIDENTIFIED SAMPLE**

Variable	Condition	N	Mean	SD	p	Sig	d
DRA-2 Baseline	Comparison	371	0.57	0.50	0.760		0.04
	Bridge	81	0.59	0.49			
School Attendance Baseline	Comparison	415	0.92	0.08	0.512		0.11
	Bridge	91	0.93	0.10			

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

The baseline equivalence across Bridge and comparison students, as well as across schools, offers some assurance about the ability to meaningfully test for group differences in outcomes. For this, multiple regression models were conducted. The limited number of measures that were available for the comparison students in the deidentified sample limited the covariates that could be considered in these models. For the DRA-2 proficiency logistic regression model, DRA-2 baseline and school attendance from the previous year were included as covariates. For the school attendance linear regression model, baseline attendance and DRA-2 proficiency from the concurrent year were included as covariates. Table 18 presents results from these multiple regression models.

**TABLE 18 - EFFECTS OF BRIDGE ON OUTCOMES: DEIDENTIFIED SAMPLE**

DRA-2 Proficiency Logistic Regression			
1-year follow-up			
Predictors	B	OR	Sig
DRA-2 Baseline	0.57	13.36	***
Bridge	-0.06	0.70	
Baseline School Attendance	0.09	9.11	
Constant	1.29		
R <sup>2</sup>	.34		
N	638		
School Attendance Linear Regression			
1-year follow-up			
Predictors	b	beta	Sig
DRA-2	0.01	0.06	
Bridge	0.03	0.11	**
Baseline School Attendance	0.33	0.33	***
School 1	0.00	0.02	
School 2	-0.01	-0.06	
School 3	-0.02	-0.10	**
Constant	0.62		
R <sup>2</sup>	0.16		
N	644		

\*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

Results indicate that there was no difference between Bridge and comparison students in the deidentified sample on DRA-2 proficiency levels. There was a statistically significant difference in school attendance between Bridge and comparison students in the deidentified sample, such that Bridge students had higher levels of school attendance ( $p < .05$ ).

### Summary: Confirmatory Questions

The confirmatory questions focus on the impact of the Bridge program relative to the comparison group on change in reading proficiency. The analysis finds some evidence of beneficial effects of the Bridge program, particularly after the first year of programming. Results with the full and matched samples



suggest that Bridge students generally become more likely to be proficient on the DRA-2 over time; in contrast, it appears that comparison students are either less likely to become proficient over time (as found for the full sample), or experience no change in their likelihood of being proficient (as with the matched sample). By their second and third years in the program, evidence suggests that Bridge students are outperforming their peers.

Unfortunately, the deidentified data did not provide any further evidence in support of the Bridge program, finding no significant differences between Bridge students and their peers in reading proficiency. However, if it is expected that the high-risk Bridge sample would be doing worse over time than their peers at school without intervention, then the lack of significant differences between these groups could suggest that the programming helps Bridge students “keep up” with other students. It is important to note, however, that there were no baseline differences in DRA-2 proficiency, which limits this conclusion. Unfortunately, the data that could be collected for the deidentified sample, including just one year of data and no demographic information, limits the conclusions that can be drawn from these results.

Overall, it does not appear that participation in the Bridge program is related to school attendance. For this secondary outcome, there is a consistent lack of differences among Bridge and comparison students across analytic models. Only the de-identified data show a significant impact of the program on school attendance. One factor that may play a role here is a lack of variability in the main sample; at baseline and all follow-ups, school attendance rates were consistently high among for both Bridge and comparison students. Statistically, this lack of variability makes it more difficult to detect significant effects. In practice, the Bridge program may not be able to impact school attendance rates among a sample that is generally attending school regularly (i.e., a ceiling effect).

## Exploratory Questions

In the fourth year, data were sufficient to address the following exploratory research questions.

### **1. Are more Bridge children reading at or above grade level by the end of third grade than comparison children?**

This exploratory research question was initially proposed to examine differences in 3<sup>rd</sup> grade reading levels between Bridge and comparison students using the Transitional Colorado Assessment Program (TCAP) measure, which at the time was Colorado’s standards-based assessment. However, over the course of the study the use of TCAP was discontinued; therefore, to address this question, we consider the only literacy measure available, the DRA-2, as the outcome measure.

We examined mean differences in DRA proficiency between Bridge and comparison students for the follow-up period when they were in third grade. Overall, there was not a significant mean difference ( $t(126)=-.21, p = .84$ ) in DRA proficiency between comparison students ( $M=.46$ ) and Bridge students ( $M=.48$ ) in third grade. Additionally, analyses using logistic regression with FIML indicated that there was not a significant difference in DRA proficiency between Bridge and comparison students in third grade.

**2. Does the amount of programming predict reading gains? For example, does the number of years of participation in the program predict reading gains?**

To examine the benefit of additional years of participation in the project (i.e., dosage), we computed change scores for reading proficiency among Bridge students. The change score has values of -1 for decline, 0 for no change, and 1 for improvement. To reliably examine change over time, only Bridge students who remained in the program and have DRA proficiency data for at least three years were examined. This resulted in a sample of 39 Bridge students, representing just 11% of the total sample. Of these 39 Bridge students, the majority (62%; n= 24) were Kindergarten students at baseline (an additional six of these students were in 1<sup>st</sup> grade at baseline, six were in 2<sup>nd</sup> grade at baseline, and three were in 3<sup>rd</sup> grade at baseline). As shown in Table 19, in the first year the largest proportion of Bridge students became proficient (n=15, 38.5%), and the majority of these students were in Kindergarten when they entered Bridge (87%; 13 of 15). In the second year, the largest proportion of Bridge students remained proficient (n=15, 38.5%). In the third year, the largest proportion of students remained not proficient (n=16, 41%). These results suggest that the Bridge program has the largest impact in the first year of programming, which is not consistent with the results from analyses conducted with the full sample. Statistically, given the limited sample size here and the fact that the majority of this small sample were Kindergarten students at baseline, it may be that these findings are being driven by the fact that the pre-test measure for most of these students is the DRA-2 Word Analysis. It may also be that, in practice, it is easier to affect change in DRA-2 proficiency in the first year for students in earlier grades.

**TABLE 19 - DRA-2 PROFICIENCY CHANGE SCORES AMONG BRIDGE STUDENTS**

Type of Change	Change Scores (N = 39)					
	1st-Year Change		2nd-Year Change		3rd-Year Change	
	n	%	n	%	n	%
Became Not Proficient	1	2.6%	13	33.3%	2	5.1%
Remained Not Proficient	10	25.6%	10	25.6%	16	41.0%
Remained Proficient	13	33.3%	15	38.5%	14	35.9%
Became Proficient	15	38.5%	1	2.6%	7	17.9%

To examine the benefit of amount of Bridges programming that students receive, we computed an aggregate dosage score that captures the number of different types of programming that students received in a given year. Scores included GR8 Readers books, Read Well, tutoring, and other non-literacy services (e.g., social-emotional programming, technology-based interventions); for example, Bridge students with a dosage score of one in year one received one out of four of these services in their first year in the program, and Bridge students with a dosage score of four in year one received all of these services in their first year of the program.

As shown in Table 20, there is evidence of a dosage effect in the first and second years. For the 1-year follow-up, number of services was marginally related to DRA-2 proficiency ( $p = .07$ ). For the 2-year follow-up, number of services was positively and significant related to DRA-2 proficiency ( $p < .001$ ). For the 3-year follow-up, dosage was not significantly related to DRA-2 proficiency ( $p = .53$ ), but the

direction of the effect and the odds ratio were consistent with findings from the first two years. There were too few cases for reliable analysis of the 4-year follow-up (N = 19).

**TABLE 20 - EFFECTS OF NUMBER OF BRIDGE SERVICES ON DRA-2 PROFICIENCY**

DRA-2 Proficiency Logistic Regression									
Predictors	1-year follow-up			2-year follow-up			3-year follow-up		
	B	OR	Sig	B	OR	Sig	B	OR	Sig
DRA-2 + WA Baseline	0.41	5.11	***	0.42	6.37	***	0.33	3.55	*
Number of Bridge Services	0.13	1.20	*	0.33	1.52	***	0.10	1.12	
N	226			144			50		

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

**3. What is the strength of the relationship between number of hours of participation and reading gains? Does this differ across program component?**

To address this question, we examined how the total number of hours of participation in Bridge was related to reading proficiency for Bridge students at each follow-up. As displayed in Table 21, there was a significant positive effect of hours of services received at the 1- and 2-year follow-ups ( $ps < .01$ ). As noted previously, there were too few cases for reliable analysis of the 4-year follow-up (N = 19).

**TABLE 21 - EFFECTS OF BRIDGE HOURS OF SERVICES RECEIVED ON DRA-2 PROFICIENCY**

DRA-2 Proficiency Logistic Regression									
Predictors	1-year follow-up			2-year follow-up			3-year follow-up		
	B	OR	Sig	B	OR	Sig	B	OR	Sig
DRA-2 + WA Baseline	0.40	5.11	***	0.43	6.38	***	0.33	3.69	**
Total Hours of Bridge Services	0.21	1.02	***	0.29	1.02	***	0.12	1.01	
N	226			144			50		

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

**4. Which program activities are most closely associated to reading gains; what are the critical program elements for success?**

Prior to examining what program activities are most closely associated with reading gains, the number of GR8 Readers books received, hours in Read Well, hours of tutoring, and hours of other services received, correlations among the program activity dosages were examined within a given year. Correlations were examined for years 1-3, as once again, there were too few cases to examine the 4-year follow-up (N = 19). Results, shown in Table 22, indicate that program activity dosages are highly correlated in each year, and seem to be most strongly correlated, on average, in the first year.

Next, program activity dosages during a given year were examined as predictors of DRA proficiency among Bridge students. Results are displayed in Table 23. For the 1- and 2-year follow-ups, the number of GR8 Readers books had a statistically significant and positive effect on DRA-2 proficiency ( $ps < .05$ ). Read Well, tutoring services, and other services had no independent relation to DRA-2 proficiency. When comparing the three core programming elements, the GR8 Readers program offers students the greatest agency, as students are allowed to select their own books to read, use in their tutoring sessions, and subsequently take home. It may be that this aspect of choice is consequential for engagement in reading, and, subsequently, proficiency. However, it may also be the case that students who are highly motivated to read are the ones who seek out more GR8 Readers books, and those students are also more likely to be proficient.

**TABLE 22 - WITHIN-YEAR CORRELATIONS AMONG BRIDGE PROGRAM ACTIVITY DOSAGE**

	1	2	3	4	5	6	7	8	9	10	11	12
1. GR8 Readers – 1 yr	-	.69**	.81**	.65**								
2. Read Well – 1 yr		-	.82**	.93**								
3. Tutoring – 1 yr			-	.83**								
4. Other Services – 1 yr				-								
5. GR8 Readers – 2 yr					-	.78**	.76**	.67**				
6. Read Well – 2 yr						-	.76**	.87**				
7. Tutoring – 2 yr							-	.80**				
8. Other Services – 2 yr								-				
9. GR8 Readers – 3 yr									-	.80**	.80**	.65**
10. Read Well – 3 yr										-	.81**	.86**
11. Tutoring – 3 yr											-	.84**
12. Other Services – 3 yr												-

\*\* $p < .01$

Additionally, the GR8 Readers program also has overlap with other programming, so results from these analyses should not be interpreted to suggest that GR8 Readers has a stand-alone effect. For example, tutors use the GR8 Readers books that students have chosen during their one-on-one sessions, and during the summer educators can choose to structure Read Well sessions to include GR8 Readers books. Also, the high correlations between GR8 Readers and the other literacy programming within years (ranging from .65 to .81) suggest that it is difficult to statistically parse out the unique impact of each literacy element.

**TABLE 23 - EFFECTS OF INDIVIDUAL BRIDGE PROGRAMS ON DRA-2 PROFICIENCY**

Predictors	DRA-2 Proficiency Logistic Regression								
	1-year follow-up			2-year follow-up			3-year follow-up		
	B	OR	Sig	B	OR	Sig	B	OR	Sig
DRA-2 + WA Baseline	0.38	5.03	***	0.42	6.54	***	0.33	3.75	**
GR8Books	0.29	1.31	**	0.36	1.36	**	0.04	1.04	
Read Well	-0.21	0.98		-0.10	0.99		0.20	1.02	
Tutoring	-0.07	-.98		0.12	1.03		-0.06	0.99	
Other Services	0.30	1.01		0.02	1.00		-0.06	0.00	
N	226			144			50		

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

**5. Are results for grades K-3 maintained for Bridge children who reach fourth or fifth grade during the study period? Do these Bridge children show greater long-term gains in reading achievement than comparison children?**

To consider whether reading proficiency gains are maintained into the later grades among Bridge students, we examined change from baseline only among those students above grade three (see Table 24). Unfortunately, the amount of data is limited for these students (Bridge n = 11, comparison n = 6); only the 2-year follow-up can be examined descriptively and should not be interpreted given the very low sample sizes.

**TABLE 24 - LONG-TERM DRA-2 PROFICIENCY CHANGE SCORES**

<b>Long-Term Change Scores (Baseline to 2-Year Follow-Up) For Students in Fourth or Fifth Grade</b>				
<b>Type of Change</b>	<b>Bridge Students (N = 11)</b>		<b>Comparison Students (N = 6)</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Became Not Proficient	1	9.1%	0	0.0%
Remained Not Proficient	9	81.8%	4	66.6%
Remained Proficient	1	9.1%	1	16.6%
Became Proficient	0	0.0%	1	16.6%

**Summary: Exploratory Questions**

The exploratory questions focus first on the long-term effects of the Bridge program; namely, whether positive effects on literacy persist past third grade. Although the results suggest that there are no benefits to the Bridge program past third grade, it is important to note that the analyses are limited by the number of Bridge and comparison students for whom there is valid data at these later grades and should thus be interpreted with caution. It is also important to note that these analyses suggest that the greatest individual gains in proficiency are made during the first year of Bridge; however, this is also the period for which there are the most data, as missing data increases significantly at later follow-ups and as students progress into later grades.

The exploratory questions also focus on understanding how the amount and type of Bridge programming is related to literacy. These results suggest that the number of Bridge programming elements that students receive (i.e., GR8 Readers, Read Well, tutoring, and other services) is positively related to DRA-2 proficiency; further, the number of hours of programming across these services is also positively related to DRA-2 proficiency. Specifically, it appears that GR8 Readers may be a particularly effective program element. However, selection bias may be affecting these dosage results. It may be that the greater motivation of those who sought the most program elements and hours rather than the program itself affected the results. Additionally, GR8 Readers books are incorporated into both Read Well and tutoring sessions, are highly correlated with these programming elements, and thus the effect of this unique aspect of programming should be interpreted with caution.

# Study Limitations

Program implementation and evaluation activities during the fourth year of the Social Innovation Fund Implementation and Impact Study yielded a number of important lessons for both OMNI and the Bridge Project.

## Program Impacts

Over time, Bridge students appear to fare better in DRA-2 proficiency than their peers who also live in Denver public housing. On average, students who are not involved with the Bridge Project's literacy programming appear to fall behind, as they become less likely to score proficient on the DRA-2; meanwhile, students who are involved show desired growth, as they become more likely to score proficient on the DRA-2. School attendance rates, a secondary outcome of interest, do not appear to be impacted by the Bridge Project. Although the study demonstrates some positive findings, there were several challenges and limitations to this study.

## Program Fidelity and Variation

Read Well and tutoring session observations indicate improvements from the previous academic year in several areas including greater consistency in program delivery. Over the course of the five years, each year the program has improved. The Bridge Project has taken several steps over the course of the five years to improve the quality and consistency of the program. In the 2015-2016 school year, Bridge educators began using education interns and student teachers. This allowed for the presence of a second adult in the room, which allowed for more teaching time and reduced behavioral problems. The Bridge Project also made some staffing changes to create a position to oversee the education program at each of the sites. This allows for more support and training directly to the educators.

To improve the tutoring program, the Bridge Project hired a full time, on-site volunteer coordinator. This new position will be responsible for ongoing training and evaluation throughout the year. The hope is that with on-site support, the volunteers will be able to better support the literacy programming.

## Comparison Student Recruitment

To address low recruitment early in the project, the study hired a part-time data coordinator in 2014 focused solely on comparison study recruitment. The data coordinator has been active in the two comparison site housing communities, recruiting at neighborhood events, and schools. Over the course of the study, the research team implemented several strategies with the aim of improving recruitment efforts, including:

- Attending events at each of the comparison neighborhood schools, such as family literacy night
- Meetings with the Denver Housing Authority liaisons to coordinate on-site events
- Passing out flyers in the neighborhoods inviting families to a meet and greet event

- On-site meet and greet event with refreshments and gift card incentives
- Coordinating with the field placement program at University of Denver School of Social Work field placement program to coordinate efforts with students working in these communities
- Attending the weekly Foodbank event to meet families
- Meeting with families at the youth activities program in Sun Valley

Despite these increased efforts, there still remained some barriers. One of the main challenges was access to information. When the researcher attended the neighborhood events, parents were not prepared with the needed information to enroll in the study, such as DPS ID number. When the data coordinator would try and follow-up with them to get the additional information, often the phone numbers provided no longer worked or voice mail messages were not returned.

A second challenge had to do with language. The Denver public housing communities are quite diverse and speak a number of different languages. The research coordinator was able to provide information and had forms available in both Spanish and English but was not able to provide information in any other languages. The limits of this may have excluded children from participating in the study.

## Missing Data

In addition to difficulties recruiting comparison group participants, the evaluation has also faced challenges resulting from missing literacy outcome data. The research team has improved their data collection processes by reviewing intake forms as they come in and initiating contact with Bridge staff or parents as soon as possible to attempt to obtain or correct missing school ID numbers. The team, in collaboration with the Bridge staff, has conducted regular audits to evaluate why data may be missing.

In addition to improving data collection methods, the research team has been reviewing internal processes for how data is managed. Several internal steps have been taken to ensure that missing data is not the result of problems within the data file and has instituted a variety of processes related to internal auditing of the data file to correct for any problems that may cause cases to be excluded. This auditing process has improved the number of cases that may have been left out due to a technical or syntax error rather than true missing data. These processes have improved the match rate, with 71% of the enrolled participants matched to literacy outcome data, as compared to a 63% match rate in the previous year. There were also attempts made to address the missing data statistically. However, given the low sample sizes, there was not enough power to use imputation methods. Instead, full information maximum likelihood estimation methods were used in analyses, which proved to be an effective approach given the ability to reliably analyze data from the 3-year follow-up, and the statistically significant findings that emerged.



# Summary and Conclusions

Since 2012, this longitudinal study has examined the dosage, fidelity, and impact of the Bridge Project's early literacy interventions. Over the course of five years of programming, and as a direct result of the Social Innovation Fund, the capacity of the Bridge project to provide high quality programming to students has increased. Furthermore, results from the quasi-experimental, between-group study yielded positive results, increasing the level of evidence for the Bridge Project's multi-pronged, early literacy programming, designed to increase low-income students' reading proficiency.

Specifically, when compared with a matched sample of their peers (i.e., other students who were similar across a variety of socioeconomic and demographic indicators, and also similarly residing in public housing), there were no pre-existing differences between Bridge and non-Bridge students in their likelihood of scoring proficient on the key indicator of literacy, the DRA-2; however, at the end of their second and third years with the program, Bridge students were more likely to be proficient than non-Bridge students. Based on the patterns of change demonstrated within each group, it appears that while Bridge students demonstrate growth in proficiency over time, non-Bridge students remain stable, and Bridge students ultimately outpace their peers who are not receiving the additional Bridge literacy interventions.

In addition to increasing the evidence-base for Bridge's early literacy intervention, SIF funding supported an implementation evaluation designed to identify opportunities to strengthen programming. Based on observation findings each year, the evaluation team offered suggestions aimed at increasing consistency in program implementation, enhancing staff and volunteer training/development opportunities, and creating stronger alignment between individual tutor skills and student needs. In response, substantial enhancements were made. First, the Bridge Project added a Director of Volunteers and Tutoring, who provides on-site orientations to help volunteers acclimate to the tutoring role, visits sites weekly on a rotating schedule to provide hands-on support to tutors as they are working with students, and coordinates a Volunteer Leadership Committee to support tutor retention. Second, the Bridge Project hired an Education Director, who is charged with observations and coaching around best practices to ensure fidelity within all the educational programming. Third, an observational tool was developed and refined throughout the SIF study. This tool is now used for peer observations so educators can receive feedback and learn from and collaborate with other educators delivering the Read Well curriculum. Finally, the Bridge Project instituted the YPQI process in order to receive more continual feedback amongst its staff and volunteers on the quality of programming being delivered. By receiving annual feedback on the programming and its impact on student outcomes, the Bridge Project was able to adjust and consider programmatic changes to enhance the literacy experiences of its students.

Further, dosage results demonstrate that over the years of the study, the Bridge Project was able to generally increase the amount of early literacy provided to study participants. Specifically, the SIF-funded Bridge Project study reached a total of 389 students with literacy services since 2012 and steadily increased the average number of Read Well and tutoring sessions that students received each



year. In addition, participation in GR8 Readers increased over the course of the study, and in 2015-16, the program returned to an average of five books per students.

The mission of the Bridge Project is to provide educational opportunities to children living in Denver’s public housing neighborhoods in order to increase high school graduation and college attendance or post-secondary vocational training. The Bridge Project has developed a multi-pronged early literacy intervention designed to improve reading proficiency that consists of a combination of three direct literacy programs (Read Well, tutoring, and GR8 Readers). The current study identified opportunities to enhance program infrastructure and implementation, including adding and refining staff roles, strengthening its volunteer training program, and implementing standardized continuous quality improvement efforts. Importantly, study results are supportive of ‘moderate’ evidence that the Bridge Project early literacy intervention increases reading proficiency for students residing in or near public housing communities. As noted by the Annie E. Casey Foundation in 2010, third-grade reading proficiency is critical for academic success, high school graduation, and breaking the cycle of intergenerational poverty. Study findings suggest that the Bridge Project’s early literacy intervention is effective at improving reading proficiency for children living in poverty.

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# Appendix A – Read Well Observation Tool

Session Date: \_\_\_\_\_ Observer: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Educator Name: \_\_\_\_\_ RW Unit #: \_\_\_\_\_ RW Book: \_\_\_\_\_

# Kids at start: \_\_\_\_\_ # Kids at end: \_\_\_\_\_ # Kids total: \_\_\_\_\_ (\_\_\_\_ boys/\_\_\_\_ girls)

# Kids matched with a tutor: \_\_\_\_\_ (Observer will need to request this from the Site Manager/Educator)

Site:  Columbine  Westwood  South Lincoln  Quigg Newton

Location in site (e.g., computer room): \_\_\_\_\_ Grade Level:  K/1  2/3

Environment			
Site has designated Read Well space	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Materials have a designated place	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Visual aids on walls	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
External Distractions	<input type="checkbox"/> None	<input type="checkbox"/> Some	<input type="checkbox"/> Many
Internal Distractions	<input type="checkbox"/> None	<input type="checkbox"/> Some	<input type="checkbox"/> Many
Notes:			
Educator and Other Adults			
Lesson and materials planned?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Content and level generally appropriate?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Educator uses innovative teaching strategies?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Pacing of the session for the group overall	<input type="checkbox"/> Too fast	<input type="checkbox"/> About right	<input type="checkbox"/> Too slow
Did the Educator divide students into sub-groups during the session?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
If so, number of groups: _____			
Were all groups supervised by either an educator or a volunteer?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Did adults other than the Read Well Educator enter the session?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
(If yes) Number of other adults entering session: _____	Time	Purpose	Distracting
	1.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	2.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	3.		<input type="checkbox"/> Yes <input type="checkbox"/> No
	4.		<input type="checkbox"/> Yes <input type="checkbox"/> No
(If applicable) Other adults in class are helpful.	<input type="checkbox"/> Never	<input type="checkbox"/> Rarely	<input type="checkbox"/> Sometimes <input type="checkbox"/> Often

(If applicable) Other adults in class are disruptive.	<input type="checkbox"/> Never	<input type="checkbox"/> Rarely	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Often
Educator's overall instructional skill level	<input type="checkbox"/> Highly skilled	<input type="checkbox"/> Average	<input type="checkbox"/> Limited/Needs guidance	
Notes:				

Students					
	None	Some	Most	All	N/A
Students engaged with material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Students follow educator instructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Students demonstrate learning of literacy skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Students responsive to incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students responsive to disincentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students display knowledge gaps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Students demonstrate behavioral issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Students eagerly help educator (e.g., pick up pencils, help classmates, distribute books)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Number of students entering session late: _____  Number of students leaving session early: _____	Time		Coming or Going		Disruptive?
	1.	<input type="checkbox"/> Coming <input type="checkbox"/> Going		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	2.	<input type="checkbox"/> Coming <input type="checkbox"/> Going		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	3.	<input type="checkbox"/> Coming <input type="checkbox"/> Going		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	4.	<input type="checkbox"/> Coming <input type="checkbox"/> Going		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Notes:					

Classroom Management					
	Never	Rarely	Sometimes	Often	N/A
Effective use of discipline (e.g., use of reflection forms)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective use of rewards (e.g., PBIS tickets)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Efficient transitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Attentive to needs of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Provides remediation when necessary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provides encouragement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Provides clear instructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Notes (including count of a) reflection forms used/observed and/or b) PBIS tickets distributed):					

**Note:** N/A is intended to indicate that an Educator did not use discipline/rewards/remediation.

**Session Activity****Group # (if applicable):** \_\_\_\_\_

Type of activity:  Letter Sound Cards  Decoding Sheets  Story Reading  Follow-up Activity  
 Other (describe):

Activity start time: \_\_\_\_\_ End time: \_\_\_\_\_ Number of children in group: \_\_\_\_\_  
 Number of children entering during activity: \_\_\_\_\_ Number of children leaving during activity: \_\_\_\_\_  
 Children who seem **comfortable** with the material:  None  Some  Most  All  
 Children who seem **somewhat comfortable** with the material:  None  Some  Most  All  
 Children who seem **uncomfortable** with the material:  None  Some  Most  All  
 Activity overseen by:  
 Educator  Intern  Volunteer  Educator, while working with other group  Not overseen

Reading components addressed during activity:  
 Comprehension  Fluency  Phonics  Vocabulary  Phonemic awareness

Activity included (check all that apply):  
 Verbal participation from individual students  Verbal participation from groups of students  
 Individual work  Group work  Literacy-focused tasks  Drawing/coloring  Writing  Reading  
 Educator sourced materials/tasks  Read Well curriculum materials/tasks

Notes:

**Session Activity****Group # (if applicable):** \_\_\_\_\_

Type of activity:  Letter Sound Cards  Decoding Sheets  Story Reading  Follow-up Activity  
 Other (describe):

Activity start time: \_\_\_\_\_ End time: \_\_\_\_\_ Number of children in group: \_\_\_\_\_  
 Number of children entering during activity: \_\_\_\_\_ Number of children leaving during activity: \_\_\_\_\_  
 Children who seem **comfortable** with the material:  None  Some  Most  All  
 Children who seem **somewhat comfortable** with the material:  None  Some  Most  All  
 Children who seem **uncomfortable** with the material:  None  Some  Most  All  
 Activity overseen by:  
 Educator  Intern  Volunteer  Educator, while working with other group  Not overseen

Reading components addressed during activity:  
 Comprehension  Fluency  Phonics  Vocabulary  Phonemic awareness

Activity included (check all that apply):  
 Verbal participation from individual students  Verbal participation from groups of students  
 Individual work  Group work  Literacy-focused tasks  Drawing/coloring  Writing  Reading  
 Educator sourced materials/tasks  Read Well curriculum materials/tasks

Notes:

**Additional Observer Notes**

# Appendix B – Tutoring Observation Tool

Session Date: \_\_\_\_\_ Observer: \_\_\_\_\_ Start Time: \_\_\_\_\_ End

Time: \_\_\_\_\_

Site:  Columbine  Westwood  South Lincoln  Quigg Newton

Location in site (e.g., computer room): \_\_\_\_\_ Length of tutoring relationship (in yrs): \_\_\_\_\_

Tutor name: \_\_\_\_\_ Tutor Gender:  Male  Female

Student Name: \_\_\_\_\_ Grade: \_\_\_\_\_ Student Gender:  Male  Female

Was a language other than English spoken during literacy components of the session?

Yes  No

Environment			
Site has a designated Tutoring space	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Materials have a place <input type="checkbox"/> Yes <input type="checkbox"/> No
External Distractions	<input type="checkbox"/> None	<input type="checkbox"/> Some	<input type="checkbox"/> Many
Internal Distractions	<input type="checkbox"/> None	<input type="checkbox"/> Some	<input type="checkbox"/> Many

Session Information				Start Time	End Time
Activity covered this session?					
Homework/Activity Time <input type="checkbox"/> Yes <input type="checkbox"/> No Homework subjects covered: <input type="checkbox"/> Math <input type="checkbox"/> LA/Reading <input type="checkbox"/> Science <input type="checkbox"/> Social Studies <input type="checkbox"/> Other: _____					
Skill Building Activity <input type="checkbox"/> Yes <input type="checkbox"/> No Describe:					
GR8 Reader book reading <input type="checkbox"/> Yes <input type="checkbox"/> No Book: _____					
GR8 Reader packet <input type="checkbox"/> Yes <input type="checkbox"/> No					
Reading components covered:			Extensively	Briefly	Not Covered
Phonics			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phonemic Awareness			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vocabulary			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fluency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comprehension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Reward time <input type="checkbox"/> No	<input type="checkbox"/> Yes				
Briefly describe:					
Other (notes):					

### Tutor

Lesson and materials planned?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Content and level generally appropriate?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Transitions generally smooth/efficient?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Pacing of the session	<input type="checkbox"/> Too fast slow	<input type="checkbox"/> About right	<input type="checkbox"/> Too
Interactions with students	<input type="checkbox"/> Mostly negative	<input type="checkbox"/> Neutral	<input type="checkbox"/> Mostly positive
Tutoring style	<input type="checkbox"/> Mostly disengaged	<input type="checkbox"/> Neutral	<input type="checkbox"/> Mostly engaged
Use of rewards/incentives (e.g., stickers)	<input type="checkbox"/> No rewards	<input type="checkbox"/> Some rewards	<input type="checkbox"/> Many rewards
Use of disincentives (e.g., warning)	<input type="checkbox"/> No disincentives	<input type="checkbox"/> Some disincentives	<input type="checkbox"/> Many disincentives
Behavior management/control of lesson	<input type="checkbox"/> Limited control	<input type="checkbox"/> Moderate control	<input type="checkbox"/> Strong control
Tutor's overall instructional skill level	<input type="checkbox"/> Limited/Needs guidance	<input type="checkbox"/> Average	<input type="checkbox"/> Highly skilled

Notes:

### Student

Attention to the tutor	<input type="checkbox"/> Mostly unfocused	<input type="checkbox"/> Sometimes focused	<input type="checkbox"/> Mostly focused
Engagement with the material	<input type="checkbox"/> Mostly disengaged	<input type="checkbox"/> Sometimes engaged	<input type="checkbox"/> Mostly engaged



Demonstrations of learning	<input type="checkbox"/> None	<input type="checkbox"/> Some	<input type="checkbox"/> Many
Follows tutor's instructions	<input type="checkbox"/> Never	<input type="checkbox"/> Rarely	<input type="checkbox"/> Sometimes <input type="checkbox"/> Usually
Response to rewards/incentives	<input type="checkbox"/> Negative response <input type="checkbox"/> Neutral/No response <input type="checkbox"/> Positive response <input type="checkbox"/> N/A (not used)		
Response to disincentives	<input type="checkbox"/> Negative response <input type="checkbox"/> Neutral/No response <input type="checkbox"/> Positive response <input type="checkbox"/> N/A (not used)		
Knowledge gaps	<input type="checkbox"/> No gaps	<input type="checkbox"/> Few gaps	<input type="checkbox"/> Some gaps <input type="checkbox"/> Many gaps
Behavioral issues	<input type="checkbox"/> No issues	<input type="checkbox"/> Few issues	<input type="checkbox"/> Some issues <input type="checkbox"/> Many issues
Notes (including reasons for distractions, e.g., other tutor pairs in the room):			

Additional Observer Notes

# Appendix C – Descriptive Study Participant Data Tables

## Family Level Demographic Data

### FAMILY SIZE

	Numeric Code	Bridge	Comparison	Variable Type
2	N/A	12 (4.6%)	8 (7.4%)	Ratio
3	N/A	33 (12.5%)	18 (16.7%)	
4	N/A	68 (25.9%)	21 (19.4%)	
5	N/A	58 (22.1%)	21 (19.4%)	
6	N/A	42 (16.0%)	11 (10.2%)	
7	N/A	9 (3.4%)	8 (7.4%)	
8	N/A	18 (6.8%)	5 (4.6%)	
9 to 13	N/A	23 (8.8%)	7 (6.5%)	
Missing	-9	N/A	9 (8.3%)	
<b>Total</b>		<b>263</b>	<b>102</b>	

### NUMBER OF CHILDREN IN HOUSEHOLD

	Numeric Code	Bridge	Comparison	Variable Type
1	N/A	29 (11.0%)	13 (12.0%)	Ratio
2	N/A	53 (20.2%)	19 (17.6%)	
3	N/A	77 (29.3%)	26 (24.1%)	
4	N/A	53 (20.2%)	15 (13.9%)	
5	N/A	14 (5.3%)	9 (8.3%)	
6	N/A	15 (5.7%)	6 (5.6%)	
7	N/A	11 (4.2%)	4 (3.7%)	
8 or 9	N/A	9 (3.4%)	4 (3.7%)	
Missing	-9	2 (0.8%)	12 (11.1%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

### FAMILY MOBILITY: HOW MANY TIMES HAS THE FAMILY MOVED FROM ONE HOUSEHOLD TO ANOTHER IN THE PAST 3 YEARS?

	Numeric Code	Bridge	Comparison	Variable Type
0 times	N/A	123 (46.8%)	40 (37.0%)	Ratio
1 time	N/A	87 (33.1%)	24 (22.2%)	
2 times	N/A	31 (11.8%)	11 (10.2%)	
3 times	N/A	8 (3.0%)	7 (6.5%)	
4 times	N/A	4 (1.5%)	6 (5.6%)	
5 times	N/A	0 (0.0%)	2 (1.9%)	
6 times	N/A	0 (0.0%)	1 (0.9%)	
8 times	N/A	0 (0.0%)	4 (3.7%)	
10 times	N/A	1 (0.4%)	0 (0.0%)	
Missing	-9	9 (3.4%)	13 (12.0%)	

<b>Total</b>	<b>263</b>	<b>108</b>
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### FAMILY INCOME STATUS

	Numeric Code	Bridge	Comparison	Variable Type
Less than \$10,000	0	150 (57.0%)	77 (71.3%)	Interval
Between \$10,000 and 24,500	1	77 (29.3%)	12 (11.1%)	
Between 25,000 and \$49,999	2	30 (11.4%)	8 (7.4%)	
Between \$50,000 and \$74,999	3	1 (0.4%)	0 (0.0%)	
\$75,000 or more	4	3 (1.1%)	1 (0.9%)	
Missing	-9	2 (0.8%)	10 (9.3%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

### LANGUAGE SPOKEN IN THE HOME

	Numeric Code	Bridge	Comparison	Variable Type
English	1	156 (59.3%)	87 (80.6%)	Nominal
Spanish	2	20 (7.6%)	2 (1.9%)	
Vietnamese	3	17 (6.5%)	0 (0.0%)	
Other	4	47 (17.9%)	6 (5.6%)	
Missing	-9	23 (8.8%)	13 (12.0%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

### PARENTAL EDUCATIONAL LEVEL

	Numeric Code	Bridge	Comparison	Variable Type
No schooling completed	0	43 (16.3%)	5 (4.6%)	Ordinal
Some school (but less than diploma or GED)	1	72 (27.4%)	33 (30.6%)	
High School Graduate/ GED	2	55 (20.9%)	29 (26.9%)	
Some college or technical school	3	57 (21.7%)	30 (27.8%)	
College Degree	4	32 (12.2%)	9 (8.3%)	
Post College Degree	5	1 (0.4%)	0 (0.0%)	
Missing	-9	3 (1.1%)	2 (1.9%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

## Child Level Demographic Data

### GENDER

	Numeric Code	Bridge	Comparison	Variable Type
Male	0	137 (52.1%)	54 (50.0%)	Binary
Female	1	126 (47.9%)	54 (50.0%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

### DID THE CHILD ATTEND PRESCHOOL?

	Numeric Code	Bridge	Comparison	Variable Type
No	0	77 (29.3%)	32 (29.6%)	Binary
Yes	1	175 (66.5%)	43 (39.8%)	
Missing	-9	11 (4.2%)	33 (30.6%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

## RACE OF CHILD\*

	Numeric Code	Bridge	Comparison	Variable Type
Black/African-American	N/A	87 (36.6%)	43 (44.8%)	Binary
Asian	N/A	32 (13.4%)	4 (4.2%)	
White/Caucasian	N/A	47 (19.7%)	19 (19.8%)	
Hispanic or Latino	N/A	118 (47.2%)	49 (48.0%)	
American Indian or Native American	N/A	6 (2.5%)	9 (9.4%)	
Multiracial	N/A	11 (5.4%)	9 (11.1%)	
Unknown	N/A	5 (2.5%)	0 (0.0%)	
Other	N/A	48 (20.2.0%)	5 (4.9%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

\* Some parents identified their child as belonging to multiple racial categories. As such, totals sum to greater than the total number of students in each group and proportions sum to greater than 100%. Each racial category is coded as a separate categorical variable coded 1 "yes", 0 "no", -9 "missing".

## CHILD GRADE

	Numeric Code	Bridge	Comparison	Variable Type
Kindergarten	0	124 (47.1%)	29 (26.9%)	Ordinal
1 <sup>st</sup> Grade	1	49 (18.6%)	26 (24.1%)	
2 <sup>nd</sup> Grade	2	47 (17.9%)	27 (25.0%)	
3 <sup>rd</sup> Grade	3	43 (16.3%)	26 (24.1%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

## Home Literary Environment

### FREQUENCY OF READING WITH CHILD IN PAST WEEK

	Numeric Code	Bridge	Comparison	Variable Type
Not at all	0	24 (9.1%)	6 (5.6%)	Ordinal
Once or twice	1	78 (29.7%)	17 (15.7%)	
Three or more times	2	81 (30.8%)	34 (31.5%)	
Every day	3	78 (29.7%)	49 (45.4%)	
Missing	-9	2 (0.8%)	2 (1.9%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

### FREQUENCY OF FAMILY DINNERS

	Numeric Code	Bridge	Comparison	Variable Type
Not at all	0	4 (1.5%)	6 (5.6%)	Ordinal
Once or twice	1	37 (14.1%)	7 (6.5%)	
Three or four times	2	50 (19.0%)	28 (25.9%)	
Five or more times	3	168 (63.9%)	59 (54.6%)	
Missing	-9	4 (1.5%)	8 (7.4%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

## BOOKS OWNED BY STUDY CHILDREN

	Numeric Code	Bridge	Comparison	Variable Type
10 or fewer books	N/A	100 (38.0%)	28 (25.9%)	Ratio
11 to 50 books	N/A	118 (44.9%)	28 (25.9%)	
More than 50 books	N/A	35 (13.3%)	29 (26.9%)	
Missing	N/A	10 (3.8%)	23 (21.3%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

## Parental Expectations and Aspirations

### CHILDREN HOW FAR DO YOU WANT YOUR CHILD TO GO IN FORMAL SCHOOLING?

	Numeric Code	Bridge	Comparison	Variable Type
Finish Elementary School	0	3 (1.1%)	8 (7.4%)	Ordinal
Finish Middle School	1	0 (0.0%)	1 (0.9%)	
Finish High School	2	11 (4.2%)	9 (8.3%)	
Attend Trade School	3	3 (1.1%)	0 (0.0%)	
Attend College or University	4	21 (8.0%)	23 (21.3%)	
Finish College or University	5	219 (83.3%)	60 (55.6%)	
Missing	-9	6 (2.3%)	7 (6.5%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

### SCHOOLING HOW FAR DO YOU THINK YOUR CHILD WILL GO IN FORMAL SCHOOLING?

	Numeric Code	Bridge	Comparison	Variable Type
Finish Elementary School	0	0 (0.0%)	0 (0.0%)	Ordinal
Finish Middle School	1	0 (0.0%)	1 (0.9%)	
Finish High School	2	10 (3.8%)	15 (13.9%)	
Attend Trade School	3	4 (1.5%)	3 (2.8%)	
Attend College or University	4	31 (11.8%)	10 (10.2%)	
Finish College or University	5	209 (79.5%)	54 (53.7%)	
Missing	-9	9 (3.4%)	19 (18.5%)	
<b>Total</b>		<b>263</b>	<b>108</b>	

# Appendix D – Bridge Study Student Intake Forms

<b>Parent/Guardian Name:</b>			
<b>Address:</b>		<b>City:</b>	<b>Zip Code:</b>
<b>Home Phone:</b>	<b>Cell Phone:</b>	<b>Work Phone:</b>	<b>Email:</b>
<b>Where do you live?</b> <input type="checkbox"/> Lincoln Park/La Alma (North or South Lincoln) <input type="checkbox"/> Westridge <input type="checkbox"/> Columbine <input type="checkbox"/> Sun Valley <input type="checkbox"/> Westwood <input type="checkbox"/> Quigg Newton <input type="checkbox"/> Other DHA housing (Please specify): _____ <input type="checkbox"/> Live in non-DHA housing			
<b>What language does your family speak in the home most often?</b> <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Vietnamese <input type="checkbox"/> Other: _____			
<b>In the past 3 years, how many times has your family moved from one home or household to another?</b>			
<b>How many family members live in your household?</b>			
<b>How many children (0-18 years old) live in your household?</b>			
<b>In the past week, how many times has most or all of your family eaten dinner together, either at home or somewhere else?</b> <input type="checkbox"/> Not at all <input type="checkbox"/> Once or twice      3 or 4 times      5 or more times			
<b>What is the highest grade or year of school of any adult in your household?</b> <input type="checkbox"/> No schooling completed <input type="checkbox"/> Some school (but less than high school diploma or GED) <input type="checkbox"/> High School Graduate/GED <input type="checkbox"/> Some college or technical school <input type="checkbox"/> College degree <input type="checkbox"/> Post college degree		<b>What is the annual income from all sources for your family?</b> <input type="checkbox"/> Less than \$10,000 <input type="checkbox"/> Between \$10,000 and \$24,999 <input type="checkbox"/> Between \$25,000 and \$49,999 <input type="checkbox"/> Between \$50,000 and \$74,999 <input type="checkbox"/> \$75,000 or more  <b>How many people, including you, depend on this income?</b> _____	
<b>Does your family qualify for free or reduced-price lunch at school? (check one)</b> <input type="checkbox"/> Free lunch <input type="checkbox"/> Reduced-price lunch <input type="checkbox"/> No, we do not qualify.			

**For Office Use Only: Please complete this section if at least one child is in Kindergarten, 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> grade**

Date Form Completed: \_\_\_\_\_ Received by (name): \_\_\_\_\_

Bridge Site:  Columbine  Lincoln Park  Quigg Newton  Westwood

**Bridge staff - Please enter the Bridge IDs for each of the children listed on this form.**

Child 1:	Child 2:	Child 3:	Child 4:	Child 5:	Child 6:
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**Staff –Please return the Participant Information Form to the DU drop box at your site.**

<b>Child 1</b>	<b>Child Name</b>	<b>Date of Birth</b>	<b>Age</b>	<b>Gender</b> <input type="checkbox"/> Male <input type="checkbox"/> Female
	<b>School</b>	<b>School Student ID#</b>	<b>Grade</b>	
	<b>Is your child (please check only one)?</b>			<b>Is your child of Hispanic, Latino or Spanish origin?</b>  <input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> White/Caucasian <input type="checkbox"/> Black/African American <input type="checkbox"/> Asian <input type="checkbox"/> American Indian or Alaska Native	<input type="checkbox"/> Native Hawaiian/Pacific Islander <input type="checkbox"/> Multiracial <input type="checkbox"/> Unknown <input type="checkbox"/> Other (please specify): _____		
	<b>Did your child attend preschool?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes. If yes, where _____			
	<b>Has your child participated at Bridge before this school year (2013-14)?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes			
	<b>How far do you want your child to go in formal schooling?</b> <input type="checkbox"/> Finish elementary school <input type="checkbox"/> Finish middle school <input type="checkbox"/> Finish high school <input type="checkbox"/> Attend trade school <input type="checkbox"/> Attend college or university <input type="checkbox"/> Finish college or university		<b>How far do you think your child will go in formal schooling?</b> <input type="checkbox"/> Finish elementary school <input type="checkbox"/> Finish middle school <input type="checkbox"/> Finish high school <input type="checkbox"/> Attend trade school <input type="checkbox"/> Attend college or university <input type="checkbox"/> Finish college or university	
	<b>About how many books does your child have of his or her own (including those shared with brothers or sisters)?</b> _____			
	<b>How many times have you or someone in your family read to your child in the past week?</b> <input type="checkbox"/> Not at all <input type="checkbox"/> Once or twice <input type="checkbox"/> 3 or more times <input type="checkbox"/> Everyday			

<b>Child 2</b>	<b>Child Name</b>	<b>Date of Birth</b>	<b>Age</b>	<b>Gender</b> <input type="checkbox"/> Male <input type="checkbox"/> Female
	<b>School</b>	<b>School Student ID#</b>	<b>Grade</b>	
	<b>Is your child (please check only one)?</b>			<b>Is your child of Hispanic, Latino or Spanish origin?</b>  <input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> White/Caucasian <input type="checkbox"/> Black/African American <input type="checkbox"/> Asian <input type="checkbox"/> American Indian or Alaska Native	<input type="checkbox"/> Native Hawaiian/Pacific Islander <input type="checkbox"/> Multiracial <input type="checkbox"/> Unknown <input type="checkbox"/> Other (please specify) _____		
	<b>Did your child attend preschool?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes. If yes, where _____			
	<b>Has your child participated at Bridge before this school year (2013-14)?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes			

<p><b>How far do you want your child to go in formal schooling?</b></p> <p><input type="checkbox"/> Finish elementary school</p> <p><input type="checkbox"/> Finish middle school</p> <p><input type="checkbox"/> Finish high school</p> <p><input type="checkbox"/> Attend trade school</p> <p><input type="checkbox"/> Attend college or university</p> <p><input type="checkbox"/> Finish college or university</p>	<p><b>How far do you think your child will go in formal schooling?</b></p> <p><input type="checkbox"/> Finish elementary school</p> <p><input type="checkbox"/> Finish middle school</p> <p><input type="checkbox"/> Finish high school</p> <p><input type="checkbox"/> Attend trade school</p> <p><input type="checkbox"/> Attend college or university</p> <p><input type="checkbox"/> Finish college or university</p>
<p><b>About how many books does your child have of his or her own (including those shared with brothers or sisters)? _____</b></p>	
<p><b>How many times have you or someone in your family read to your child in the past week?</b></p> <p><input type="checkbox"/> Not at all                      <input type="checkbox"/> Once or twice                      <input type="checkbox"/> 3 or more times                      <input type="checkbox"/> Everyday</p>	



## Appendix E – Comparison Student Intake Forms

<b>Parent/Guardian Name:</b>			
<b>Address:</b>		<b>City:</b>	<b>Zip Code:</b>
<b>Home Phone:</b>	<b>Cell Phone:</b>	<b>Work Phone:</b>	<b>Email:</b>
<b>Where do you live?</b> <b>Where do you live?</b> <input type="checkbox"/> Lincoln Park/La Alma (North or South Lincoln) <input type="checkbox"/> Westridge <input type="checkbox"/> Columbine <input type="checkbox"/> Sun Valley <input type="checkbox"/> Westwood <input type="checkbox"/> Quigg Newton <input type="checkbox"/> Other DHA housing (Please specify): _____ <input type="checkbox"/> Live in non-DHA housing			
<b>What language does your family speak in the home most often?</b> <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Vietnamese <input type="checkbox"/> Other: _____			

<b>In the past 3 years, how many times has your family moved from one home or household to another?</b>	
<b>How many family members live in your household?</b>	
<b>How many children (0-18 years old) live in your household?</b>	
<b>In the past week, how many times has most or all of your family eaten dinner together, either at home or somewhere else?</b> <input type="checkbox"/> Not at all <input type="checkbox"/> Once or twice      3 or 4 times      5 or more times	

<b>What is the highest grade or year of school of any adult in your household?</b> <input type="checkbox"/> No schooling completed <input type="checkbox"/> Some school (but less than high school diploma or GED) <input type="checkbox"/> High School Graduate/GED <input type="checkbox"/> Some college or technical school <input type="checkbox"/> College degree <input type="checkbox"/> Post college degree	<b>What is the annual income from all sources for your family?</b> <input type="checkbox"/> Less than \$10,000 <input type="checkbox"/> Between \$10,000 and \$24,999 <input type="checkbox"/> Between \$25,000 and \$49,999 <input type="checkbox"/> Between \$50,000 and \$74,999 <input type="checkbox"/> \$75,000 or more  <b>How many people, including you, depend on this income?</b> _____
<b>Does your family qualify for free or reduced-price lunch at school? (check one)</b> <input type="checkbox"/> Free lunch <input type="checkbox"/> Reduced-price lunch <input type="checkbox"/> No, we do not qualify.	

**For Office Use Only**

Date Form Completed: \_\_\_\_\_

Received by (name): \_\_\_\_\_

Study ID (to be entered by OMNI): \_\_\_\_\_

<b>Child 1</b>	<b>Child Name</b>	<b>Date of Birth</b>	<b>Age</b>	<b>Gender</b> <input type="checkbox"/> Male <input type="checkbox"/> Female
	<b>School</b>	<b>School Student ID#</b>	<b>Grade</b>	
	<b>Is your child (please check only one)?</b>			<b>Is your child of Hispanic, Latino or Spanish origin?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> White/Caucasian	<input type="checkbox"/> Native Hawaiian/Pacific Islander	<input type="checkbox"/> Multiracial	
	<input type="checkbox"/> Black/African American	<input type="checkbox"/> Unknown	<input type="checkbox"/> Other (please specify)	
	<input type="checkbox"/> Asian			
	<input type="checkbox"/> American Indian or Alaska Native			
<b>Did your child attend preschool?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes. If yes, where _____				
<b>How far do you want your child to go in formal schooling?</b>		<b>How far do you think your child will go in formal schooling?</b>		
<input type="checkbox"/> Finish elementary school		<input type="checkbox"/> Finish elementary school		
<input type="checkbox"/> Finish middle school		<input type="checkbox"/> Finish middle school		
<input type="checkbox"/> Finish high school		<input type="checkbox"/> Finish high school		
<input type="checkbox"/> Attend trade school		<input type="checkbox"/> Attend trade school		
<input type="checkbox"/> Attend college or university		<input type="checkbox"/> Attend college or university		
<input type="checkbox"/> Finish college or university		<input type="checkbox"/> Finish college or university		
<b>About how many books does your child have of his or her own (including those shared with brothers or sisters)?</b> _____				
<b>How many times have you or someone in your family read to your child in the past week?</b>				
<input type="checkbox"/> Not at all <input type="checkbox"/> Once or twice <input type="checkbox"/> 3 or more times <input type="checkbox"/> Everyday				

<b>Child 2</b>	<b>Child Name</b>	<b>Date of Birth</b>	<b>Age</b>	<b>Gender</b> <input type="checkbox"/> Male <input type="checkbox"/> Female
	<b>School</b>	<b>School Student ID#</b>	<b>Grade</b>	
	<b>Is your child (please check only one)?</b>			<b>Is your child of Hispanic, Latino or Spanish origin?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> White/Caucasian	<input type="checkbox"/> Native Hawaiian/Pacific Islander	<input type="checkbox"/> Multiracial	
	<input type="checkbox"/> Black/African American	<input type="checkbox"/> Unknown	<input type="checkbox"/> Other (please specify)	
	<input type="checkbox"/> Asian			
	<input type="checkbox"/> American Indian or Alaska Native			
<b>Did your child attend preschool?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes. If yes, where _____				

<p><b>How far do you want your child to go in formal schooling?</b></p> <p><input type="checkbox"/> Finish elementary school</p> <p><input type="checkbox"/> Finish middle school</p> <p><input type="checkbox"/> Finish high school</p> <p><input type="checkbox"/> Attend trade school</p> <p><input type="checkbox"/> Attend college or university</p> <p><input type="checkbox"/> Finish college or university</p>	<p><b>How far do you think your child will go in formal schooling?</b></p> <p><input type="checkbox"/> Finish elementary school</p> <p><input type="checkbox"/> Finish middle school</p> <p><input type="checkbox"/> Finish high school</p> <p><input type="checkbox"/> Attend trade school</p> <p><input type="checkbox"/> Attend college or university</p> <p><input type="checkbox"/> Finish college or university</p>
<p><b>About how many books does your child have of his or her own (including those shared with brothers or sisters)? _____</b></p>	
<p><b>How many times have you or someone in your family read to your child in the past week?</b></p> <p><input type="checkbox"/> Not at all                      <input type="checkbox"/> Once or twice                      <input type="checkbox"/> 3 or more times                      <input type="checkbox"/> Everyday</p>	