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Evaluating *Summer Brain Gain*: 2015 Study Report

SUBMITTED TO:

Boys & Girls Clubs of America

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Evaluation of Summer Brain Gain: 2015 Executive Summary

Introduction

To help counteract the detriment of the summer months on student learning, particularly among underserved youth, in 2013 Boys & Girls Clubs of America (BGCA) launched Summer Brain Gain (SBG), a research-informed summer educational program designed to prevent summer learning loss and foster creative-thinking skills. The program uses a project-based approach to engage youth in learning through discovery, creative expression, and group work and includes age-appropriate curriculum modules for elementary, middle school, and high school youth.

In 2015, BGCA commissioned Metis Associates to design and conduct an evaluation of the elementary SBG modules to continue to inform curriculum refinement, program training, and implementation, and examine outcomes for participating youth. The 2015 evaluation, the focus of this report, was the third part in a multi-year evaluation of SBG and studied the relationship between program fidelity and practices and youth outcomes. It featured a randomized control trial to measure program effectiveness in early literacy (grades 1 to 3) and in reading and math (grades 4 and 5).

Key Findings

SBG participation appears to stem summer learning loss and lead to gains in academic skills. The present study yielded evidence of the program's effectiveness, including:

- SBG participants demonstrated sizeable, but not statistically significant, gains in math skills in comparison to non-participating youth; a finding supported by research (Cooper H. K., 2000) that suggests summer programs lead to more favorable outcomes on math assessments than on reading assessments.

- Younger participants (grades 1 – 3) achieved statistically significant gains in early literacy skills. Older participants (grades 4 and 5) experienced no significant learning loss in math and reading**.** Over the course of the program, these participants maintained their average performance in both subjects.

Implementation and experience may be responsible for different outcomes. The evaluation findings showed that certain conditions were sometimes associated with better outcomes, specifically:

- *Program dosage.* For younger participants, those who attended Clubs with reduced program instructional hours per day showed significantly greater improvements in early literacy. For

older youth, no statistically significant differences were evident for reading or math based on high or low program dosage.

- *Club experience.* Youth at Clubs with previous SBG experience significantly outperformed youth at newly implementing Clubs in the areas of early literacy and math.

- *Program fidelity.* While Club adherence to all of the SBG program fidelity guidelines did not yield better youth outcomes, implementation of individual guidelines was associated with performance in certain subjects. For example, club-wide implementation of elementary SBG was associated with statistically significant gains in early literacy, and three or more hours of daily program instruction appeared to be associated with gains in reading.

Clubs successfully implemented elementary SBG, despite some challenges. The 2015 study showed that:

- Across all Clubs, the great majority of SBG instructors used the program's four essential project-based learning practices – engage, express, evaluate, and exhibit – to facilitate the elementary modules with youth.

- Both program instructors and Club leadership benefitted from various SBG training opportunities and technical assistance resources launched during summer 2015, with the CPO Webinar, Planning Kit, program hotline, and Weekly Module Webinars showing the greatest use.

- According to program instructors, the most successful program modules offered youth engaging and creative content/themes and featured opportunities for youth to work in group activities and projects.

- Clubs experienced the greatest challenges related to accessibility of program books and materials and the amount of daily preparation and instructional time required.

- While national BGCA staff encouraged and empowered Clubs to tailor the SBG curricula to meet the diverse social and academic needs of youth, a good number of instructors reported challenges in customizing the delivery of the modules. This was particularly true for younger program participants (rising grades K-3).

- Clubs with prior SBG experience were better implementers of the program. They were much more likely to implement with fidelity and complete all six program modules, and almost twice as likely to offer three or more program instructional hours than were new SBG Clubs.

Recommended Next Steps for BGCA

- Investigate why the math impact seems more pronounced than early literacy and reading.

- Design future evaluations to study the relationship between prior SBG experience and successful implementation and outcomes and what implications this might have for training

and support for new Clubs. In addition, BGCA might consider a study of the effects of youth participation in SBG over multiple, consecutive summers.

- Create customized, separate curricula for youth in early and upper elementary grades groups and establish grade-group specific fidelity criteria, including standards for activity completion at the module level.
- Consider identifying a set of experienced Clubs to provide mentoring and support for new SBG Clubs and engaging staff from experienced Clubs in identifying a set of lessons learned to help inform training and support for newcomers.
- Conduct a rigorous replication study that examines outcomes based on new program fidelity requirements. This might explore the presence of characteristics cited in the literature as effective for summer learning programs (Bell, 2007; Rand Education, 2011).

Study Design

Metis randomly assigned the 55 Clubs that agreed to participate in the 2015 study to one of two groups - treatment (Clubs that would implement SBG) and control (Clubs that would not implement any published or validated academic summer program). The purpose of random assignment was to assure that Clubs that implemented SBG and those that did not were similar to each other (e.g., equivalent) at the onset of the summer. Seven Clubs opted out of the evaluation, bringing the final study sample to 48 Clubs – 26 treatment Clubs and 22 control Clubs.

The evaluation collected implementation and outcome data from the following sources:

- *Program Implementation Surveys* completed by Club leadership at the end of the summer (treatment and control Clubs)
- *Instructor Logs* completed weekly by SBG instructors (treatment Clubs)
- *Member Surveys* completed by youth in grades 3-5 at the start and end of the summer (treatment and control Clubs)
- *Attendance Forms* maintained by program instructors (treatment and control Clubs)
- *Renaissance Learning STAR Assessments* administered with youth in grades 1-5 at the start and end of the summer program (treatment and control Clubs)

2015 Study Final Report

1. Background and Purpose

A. Summer Brain Gain

As one of the nation's largest and well-regarded youth-development organizations, the Boys and Girls Clubs of America (BGCA) is steadfast in its commitment to serving young people most in need. By providing high quality and accessible out-of-school time services in education and career development, character and leadership development, health, recreation, and fitness, and other specialized programs, BGCA aims to ensure that the 4 million youth served by local Clubs annually are successful in school and in life.

In response to the growing body of research on the detriment of the summer months on student learning, particularly among underserved youth, in 2013 BGCA launched Summer Brain Gain, a set of research-informed summer learning modules, to mitigate or prevent summer learning loss and keep young people on track for the coming school year. Created to integrate easily into a local Club's traditional summer program schedule, Summer Brain Gain is a six-week program comprised of theme-based age-appropriate curriculum modules for elementary, middle school, and high school youth. BGCA designed the modules to provide Club members with fun, engaging, and hands-on summer learning experiences. Each set of modules (elementary, middle school, and high school) uses a project-based learning approach to engage youth in learning through discovery, creative expression, group work, and a final project, presentation, or culminating activity. The SBG themes vary by module as follows:

- Elementary: Collaboration, heroes, inventions, multicultural connections, healthy lifestyles, and space
- Middle school: Hands-on science and creativity
- High school: College and career awareness

For all SBG modules, the learning objectives are to maintain the reading and math skills of participating youth, while developing their competencies in critical thinking and other 21st century learning skills.

In 2014, BGCA expanded Summer Brain Gain (SBG) to include Read! This component is a 6-week summer reading program that provides Clubs with a second, less time intensive summer programming option. SBG Read! includes weeklong modules differentiated by age group (elementary, middle school, and high school) and based on high quality, age-appropriate books or informational text. Each module includes skill development activities and two 30-minute reading sessions designed to bring reading to life for participating youth.

For summer 2015, BGCA implemented a number of enhancements to SBG based on lessons learned and early evaluation findings. These included:

- Differentiated early and upper elementary activities for SBG Read!
- Enhanced theme-based activities
- Created module frameworks based on project-based learning principles
- Offered 2-week supplemental STEM activities
- Launched expanded SBG training opportunities and new program resources
- Aligned SBG curricula with Common Core Performance Standards
- Integrated the use of Marzano's high-yield instructional strategies (Marzano, Pickering, & Pollack, 2001) into SBG training

B. Purpose of the Study

Following a competitive Request for Proposal (RFP) process, in April 2013, BGCA selected Metis Associates, a national research and evaluation firm with special expertise in both education and youth development, to conduct a multi-year evaluation of Summer Brain Gain. The overall purposes of the Summer Brain Gain evaluation were as follows:

- To fully understand all aspects of program delivery/implementation, including factors at the Club-level (e.g., required staffing, funding, enrollment), BGCA-provided program training and technical assistance, and incorporation of project-based learning practices
- To identify program fidelity standards and assessment tools using annual formative and summative data
- To investigate early outcomes for participating youth in preventing summer learning loss, engaging youth in learning, and developing 21st century learning skills – and how these outcomes are impacted by program fidelity
- To begin to establish an evidence base of the effectiveness of Summer Brain Gain through the design and execution of a rigorous impact study

The SBG evaluation began in May 2013 at the start of the program's inaugural summer with 23 Clubs. This first-year evaluation covered all three summer learning modules and largely focused on formative evaluation of the program pilot. In summer 2014, the evaluation scope broadened to include SBG Read! Conducted with 25 Clubs, the second-year evaluation examined implementation and early outcomes of both SBG and SBGR and primarily focused on the elementary and middle school levels.

Table 1. *Summer Brain Gain Program Evaluation Overview*

	2013	2014	2015
Number of Evaluation Clubs	23 Clubs	25 Clubs	55 Clubs – 28 Treatment Clubs 27 Control Clubs
Program Components	Summer Brain Gain	Summer Brain Gain Summer Brain Gain Read!	Summer Brain Gain
Program Modules	Elementary, Middle School, & High School	Elementary & Middle School	Elementary
Major Evaluation Focus	✓ Pilot Implementation ✓ Early Outcomes	✓ Implementation ✓ Early Outcomes	✓ Theory of Change Development ✓ Implementation ✓ Outcomes ✓ Program Impact

Key early findings from the 2013 and 2014 SBG evaluations included the following:

- During the program's first two summers, on average, participants consistently showed no significant change in reading and math scores. In other words, SBG participants maintained their average reading and math skill levels over the course of the summer program, which is encouraging given that most youth lose about two months of grade-level equivalency in math skills during the summer, and low-income youth lose approximately the same ground in reading achievement (Cooper, Nye, Charlton, & Lindsay, 1996).
- Moreover, in 2014, in some subjects and grades, youth showed significant improvements in academic skills. Improvements in reading skills were evident for participants in rising grades 5 and 8 and in math skills for youth in rising grades 4, 5, and 6.
- In 2013, middle school youth showed positive changes in 21st century skills and other areas, such as reading engagement and interest in science, though this was not evident in 2014.

The 2015 evaluation design focused solely on the implementation and outcomes associated with the elementary modules of Summer Brain Gain. An elementary school approach allowed the study to maximize the number of Clubs eligible for participation in the rigorous design and reduce the data collection burden on evaluation Clubs. The 2015 Summer Brain Gain evaluation included five key components:

1. Develop a set of program fidelity requirements and guidelines of best practices for participating treatment Clubs

2. Work with BGCA to articulate a theory of change for Summer Brain Gain that clearly connects implementation, fidelity, and intended outcomes for youth by program level (elementary, middle school, and high school)

3. Examine the extent to which Clubs implement Summer Brain Gain with fidelity and encounter issues related to program implementation

4. Assess outcomes for youth participating in the elementary modules of Summer Brain Gain, including how these are impacted by program fidelity or other factors (e.g., youth attendance, prior Club experience with Summer Brain Gain), if at all

5. Design and implement a randomized control trial (RCT) to begin to establish an evidence base for the effectiveness of Summer Brain Gain in early literacy, reading, and/or math for youth in the rising elementary grades

C. Theory of Change

At the start of the 2015 evaluation, the evaluation team facilitated discussions with BGCA to develop a theory of change for Summer Brain Gain that would provide a thoughtful, coherent framework for assessing whether the program is working as planned and needs for program improvement. The output of this work was a SBG program logic model (Figure 1) that describes the pathway for SBG from the needs the program addresses, to the changes and outcomes BGCA wants to achieve for participating youth, to how SBG will achieve these outcomes (e.g., resources and program activities).

Figure 1. *Summer Brain Gain Logic Model (developed in winter 2015)*

SITUATION	INPUTS/RESOURCES	OUTPUTS		OUTCOMES/IMPACT
WHAT WE ADDRESS	WHAT WE PROVIDE	WHAT WE DO	WHO WE REACH	WHAT WE ACHIEVE FOR YOUTH
Disproportionate summer learning loss that afflicts low-income students Unaffordable or inaccessible summer school programs Persistent achievement gaps that exist between students with lower- and higher-economic backgrounds	Expertise of BGCA professional staff The research-based Brain Gain summer program curriculum based on project-based learning principles Lessons learned from three consecutive annual evaluations of *Summer Brain Gain* focused on both implementation and outcomes	Three-phased program curriculum training Peer learning opportunities Program implementation technical assistance Self-evaluation tools and technical assistance	Local Boys & Girls Club administrative staff Youth development instructional staff Youth members	*Short-Term* Greater interest in reading Skill development in creating thinking, problem-solving, and decision-making Improved peer collaboration and teamwork skills No noted significant summer learning loss in early literacy, reading, and math *Intermediate* Significant early literacy, reading and math gains *Long-Term* Greater likelihood of overall academic success

D. 2015 Evaluation Questions

The 2015 (third-year) evaluation of Summer Brain Gain addressed questions related to implementation, outcomes, and impact, as shown below.

Implementation

- To what extent do Clubs implement elementary SBG with fidelity to the curriculum? In what way does this vary by prior experience with SBG implementation, if at all?
- How satisfied are Clubs with the program orientation, curriculum training, and implementation technical assistance provided by BGCA? How might BGCA improve these services, if at all?
- To what extent did the program facilitators receive the right level of training to support program fidelity?
- What are the main implementation successes and challenges experienced by participating Clubs? How do these differ from the past two summers and by years of SBG implementation experience, if at all?

Outcomes

- What are stakeholders' perceptions of the SBG elementary program? To what extent have perceptions of the program changed since the program began in 2013? In what ways can BGCA improve the program?
- To what extent are there increases in 21st Century learning and other related skills among participating youth?

Impact

- What is the impact of Summer Brain Gain on the early literacy, reading, and math skills of participating youth in rising grades K-5, compared to a randomly selected control group of non-participating youth?
- To what extent do these impacts relate to program intensity, level of participation, and/or other program fidelity measures?

2. Methods

A. Study Sample

Following a series of webinars designed to inform Clubs about the experimental design for the 2015 evaluation of Summer Brain Gain[1], BGCA recruited 55 Clubs to participate in the study of the elementary modules. Metis randomly assigned these Clubs to two groups -- treatment (28 Clubs) and control (27 Clubs) – to assure that Clubs implementing Summer Brain Gain and those that did not were similar to each other (e.g., equivalent) prior to the start of program implementation. Of the 55 Clubs, seven (13%) elected to withdraw from the evaluation. Thus, the final study sample included 48 Clubs – 26 treatment Clubs and 22 control Clubs.

The treatment Clubs were to implement the elementary Summer Brain Gain modules in accordance with program fidelity guidelines derived from the 2014 study findings, which included:

- Offering the program to youth Club-wide,
- Providing at least 3 hours of program instruction daily, and
- Implementing at least five of the six elementary modules

While the control Clubs were to abstain from implementing Summer Brain Gain (including Summer Brain Gain: Read!) and any other published summer learning curriculum, they were permitted to provide up to four hours per week of locally-developed literacy and/or math activities, such as Book Clubs, group reading, math games, academic tutoring, etc.

B. Implementation and Outcome Measurement

To address the 2015 evaluation questions, the Metis team collected and analyzed qualitative and quantitative data from both treatment and control Clubs. A description of the primary data collection instruments follows, with copies of instruments provided in Attachment 2 of this report.

Program Implementation Survey

One staff member at each Club who was most knowledgeable about the implementation of Summer Brain Gain (treatment) or summer programming (control) was to complete the Program Implementation Survey at the end of the summer. All but one of the treatment Clubs (25 of the 26) submitted the Program Implementation Survey; this represents a 96% response rate. Respondents to the survey were mostly Club directors and other Club-level administrators

[1] Metis and BGCA co-facilitated introductory webinars on the 2015 SBG evaluation in March 2015, providing Club leadership with information about random selection and the conditions associated with assignment to both groups.

(48%) or Youth Development Professionals (24%). For treatment Clubs, the Program Implementation Survey asked about the following:

- Numbers of program staff and youth participants;
- Fidelity of program implementation (number of modules completed, instructional hours spent per day);
- Opinions on the quality and effectiveness of the program materials, training, and Learning Coach;
- Perceptions of youth engagement and satisfaction;
- Implementation successes and challenges; and
- Overall satisfaction with Summer Brain Gain

Similarly, all but one of the 22 control Clubs (96%) completed the Program Implementation Survey. Respondents to the survey were mostly Program or Educational Directors (43%) and Site, Unit, or Club Directors (38%). The control Club survey asked information about:

- Implementation of any published or validated summer reading or math curricula or locally developed summer learning program;
- Instructional hours spent per day on summer reading or math programs;
- Opinions on the communication with BGCA and Metis; and
- Perceptions of youth engagement (e.g. interest in reading, collaboration and teamwork, and communication) and satisfaction

Weekly Instructor Logs

Summer Brain Gain instructors at the treatment Clubs were to complete an online *Weekly Instructor Log* at the conclusion of each week to provide information about the program modules. All 26 treatment Clubs (100%) submitted 204 *Weekly Instructor Logs* across the six program modules (Table 2). The *Weekly Instructor Logs* asked about the following key elements:

- Summer Brain Gain modules and module activities completed;
- Average number of youth participants per week;
- Club space used in the facilitation of the module;
- Planning time for modules and activities;
- Instructional practices used;
- Perceptions of overall effectiveness of the modules and practices;
- Perceptions of module/program impact on the development of 21st century skills;
- Successes and challenges of the module; and
- Opinions of additional training and support needed for effective implementation

Table 2. *Number of Logs Completed by Module*

Elementary SBG Module	Number
Module 1: The Power of Collaboration	40
Module 2: Hooray for Heroes	43
Module 3: One Bright Idea After Another	33
Module 4: Making Global Connections	31
Module 5: Fit for Life	29
Module 6: Race to the Future	29
Total	**204**

Member Survey

Treatment and control Clubs administered the *Member Survey* to all participating youth in rising grades 3-5 at the start (pre-survey) and the end (post-survey) of Summer Brain Gain. The survey questioned youth about their attitudes and interest around reading, group work, problem solving, and 21st century skills. Post-surveys (treatment Clubs only) also asked members for their feedback on program activities and the overall Summer Brain Gain program.

The data in Table 3a show that 40 of the 48 evaluation Clubs (83%) administered the pre-member survey with 1,006 youth; and 41 out of 48 Clubs (or 85%) submitted completed post-surveys for 855 youth.

Table 3a. *Member Survey Response Rates, by Evaluation Group*

Evaluation Group	Pre-Administration		Post-Administration	
	Number of Surveys	Club Participation Rate	Number of Surveys	Club Participation Rate
Treatment (N=26 Clubs)	555	19 (73%)	461	22 (85%)
Control (N=22 Clubs	451	21 (95%)	394	19 (86%)
Total (N=48 Clubs)	**1,006**	**40 (83%)**	**855**	**41 (85%)**

Of the total number of completed surveys from both survey administrations, there were matched pre- and post-survey data for 491 youth (Table 3b). Several factors may have contributed to this number, including inconsistent youth attendance, drop-in participation, and overall program attrition.

Table 3b. *Match Rates for Member Surveys, by Evaluation Group*

Evaluation Group	Number of Pre Surveys	Number of Post Surveys	Number of Matched Surveys	Match Rate
Treatment (N=26 Clubs)	555	461	255	55.3%
Control (N=22 Clubs)	451	394	236	59.9%
Total (N=48 Clubs)	**1,006**	**855**	**491**	**57.4%**

Summer Program Roster & Attendance Form

A *Summer Program Roster and Attendance Form* captured daily program attendance data as well as basic demographic information about program participants at both treatment and control Clubs. Clubs used this form to create program rosters for all participants, record information about their gender, racial/ethnic background, and poverty status (i.e., eligibility for free- or reduced-price lunch), and record total number of program days attended. At the end of the evaluation, 22 treatment Clubs (an 85% response rate) and 20 control Clubs (a 91% response rate) submitted a completed *Summer Program Roster & Attendance Form*.

Summer Brain Gain Program Expense Form

Treatment Clubs were to complete and submit a program expense form at the end of the summer to understand the specific costs associated with implementing the elementary Summer Brain Gain program. *The SBG Program Expense Form* collected the following information:

- Number of youth in rising grades K-5;
- Number of Summer Brain Gain classes;
- Full-time and part-time salaries;
- Technology expenses (equipment purchases, technical support, internet access, and communication costs);
- Program material expenses (books, DVD movies, art supplies, youth prizes, classroom supplies, science equipment, journals, paper goods);
- Printing and copying expenses; and
- Other program expenses

Among the 26 treatment Clubs, 20 or 77% submitted a completed program expense form.

Renaissance Learning STAR Assessments

All Clubs (treatment and control) were to administer the Renaissance Learning STAR Assessments with summer program youth in rising grades 1-5 before and after the program, following a pretest/posttest design. The STAR assessments are valid and reliable measures of students' early literacy, reading, and math skills when used for program evaluation. The assessments test multiple domains within each subject area:

- The *STAR Early Literacy Assessment* measured:
    - Eight literacy domains, including print concepts, phonological awareness, phonics and word recognition, fluency, vocabulary acquisition, and use
    - Three math domains, including counting and cardinality, operations and algebraic thinking, and measurement
- The *STAR Reading Assessment* measured skills in four major domains: foundational skills, reading informational text, reading literature, and language.

- The *STAR Math Assessment* measured skills in 11 domains: counting and cardinality, ratios and proportional relationships, operations and algebraic thinking, number system, geometry, measurement and data, expressions and equations, numbers and operations in base ten, fractions, statistics and probability, and functions.

For the SBG evaluation, the administration protocol called for Clubs to administer the STAR Early Literacy assessment with at least 15 youth in rising grades 1-3 and the STAR Reading and Math assessments with at least 10 youth in rising grades 4 and 5. Table 4 shows the number and percent of Clubs that administered the STAR assessments and the number of youth for whom there was matched pre- and post-assessment data.

Table 4. *STAR Assessment Data, by Subject Area and Evaluation Group*

	Club Participation Rate	Total Number of Pre-Assessments	Number of Matched Pre/Post Assessments	Match Rate
Early Literacy (Rising Grades 1-3)				
Treatment (N=28)	21 (75.0%)	265	189	71.3%
Control (N=27)	18 (66.7%)	251	141	56.2%
Total (N=55)	39 (70.9%)	516	330	64.0%
Reading (Rising Grades 4-5)				
Treatment (N=28)	20 (71.4%)	237	163	68.8%
Control (N=27)	19 (70.4%)	253	176	69.6%
Total (N=55)	39 (70.9%)	490	339	69.2%
Math (Rising Grades 4-5)				
Treatment (N=28)	20 (71.4%)	225	141	62.7%
Control (N=27)	16 (59.3%)	208	131	63.0%
Total (N=55)	36 (65.5%)	433	272	62.8%

C. Sample Attrition

Sample attrition refers to the overall rate of Clubs and participants that left the study for different reasons. Differential attrition is the difference in sample loss between treatment and control groups. It is important to examine sample attrition and differential attrition to ensure internal validity of the study. When attrition rates are high enough to introduce bias into an experimental design study, it is best practice to establish baseline equivalence of the post-attrition sample. In other words, if sample attrition is high, baseline data for the treatment and control groups requires preliminary examination to determine the extent to which the groups are similar prior to conducting any rigorous impact analyses.

As such, this section discusses sample attrition for the three analytic samples for the SBG evaluation—one for each STAR assessment. Since the evaluation[2] used a cluster randomized

[2] Note there were no joiners in this cluster-randomized study.

design, the study considered attrition both at the cluster (Club) and sub-cluster (youth) level. Table 5 shows the overall and differential attrition rates for each analytic sample (i.e., STAR assessment subject) at the Club and individual level, the thresholds used to establish low or high attrition, and the standardized group mean difference (Hedge's g) in pre-test STAR assessments to establish baseline equivalence (if necessary).

Table 5. *Attrition and Baseline Equivalence for the STAR Assessment Analytic Groups*

STAR Subject		Cluster Attrition (Club-Level)		Sub-cluster Attrition* (Youth-Level)		Baseline Equivalence
		Observed	Differential threshold (sample loss)**	Observed	Differential threshold (sample loss)**	Hedge's g
Early Literacy	Overall	29.1%		36.0%		-0.006
	Differential	8.3%	*8.4%*	15.1%	*7.0%*	
	Conclusion		***Low***		***High***	
Reading	Overall	29.1%		30.8%		N/A
	Differential	1.1%	*8.4%*	0.8%	*8.2%*	
	Conclusion		***Low***		***Low***	
Math	Overall	34.5%		37.2%		0.032
	Differential	12.2%	*7.2%*	0.3%	*6.7%*	
	Conclusion		***High***		***Low***	

**** Based on analytic sample (cases with matched pre and post)***

***** Cut-offs for the difference in sample loss between treatment and control groups that classify differential attrition rates as either low or high***

The data in Table 5 show:

- For all three analytic samples, similar overall attrition rates at the youth-level.
- For the reading analytic sample, low differential attrition at both the Club and youth levels.
- For the math analytic sample, high differential program attrition at the youth-level (12.2%). In other words, for this sample group, proportionately more treatment Clubs (71.4%) had youth with math results than did the control Clubs (59.3%) (Table 4).
- For the early literacy analytic sample, high differential program attrition at the Club level (15.1%). For this sample, more youth in the treatment group had post-test results (71.3%) than did the control group (56.2%) (Table 4).
- Despite differential program attrition at the Club-level within the math and early literacy analytic samples, the analyses of pre-assessment scores of youth who remained at the treatment and comparison Clubs at the time of the posttest showed baseline equivalence. (As denoted in Table 5, the Hedge's g for both samples is less than 0.05).

3. Results

A. Program Implementation

The evaluation collected systematic information about SBG implementation from treatment Clubs primarily from the *2015 Program Implementation Survey*, the *Weekly Instructor Logs*, and the *Program Roster & Attendance Form*. In particular, this section presents findings about:

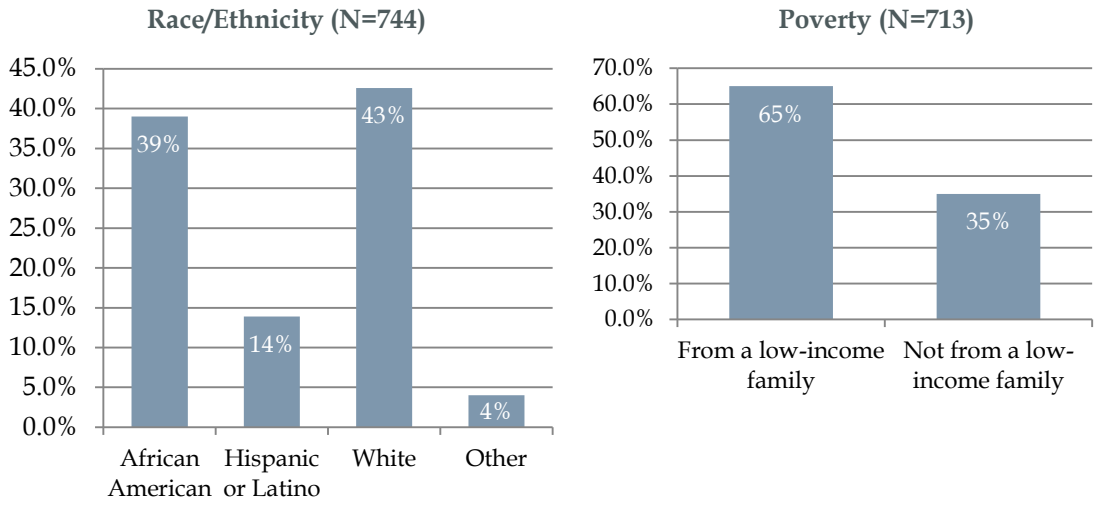
- General implementation
- Adherence to program fidelity,
- Satisfaction with program orientation, curriculum training, and implementation technical assistance,
- Appropriateness of program instructor training, and
- Key program implementation successes and challenges

Where possible, this draws comparisons to implementation data from prior summer evaluations (e.g., 2013 and 2014) and highlights differences in 2015 results for Clubs with prior SBG implementation experience vs. Clubs that were new to SBG.

i. General Implementation

Across the treatment Clubs, an average of three program instructors per Club facilitated the Elementary SBG program with approximately 754 youngsters (with a mean of 57 youth per Club), for an average facilitator to youth ratio of about 1:19. The program served more than twice as many children in rising grades K-3 (506 or 71%) than youth in rising grades 4 and 5 (215 or 29%). Participating youth also differed considerably by racial/ethnic background and eligibility for free- or reduced-priced lunch (a commonly used proxy for families living in poverty) (Figure 2).

Figure 2. *Demographic Profile of 2015 Elementary SBG Youth (Source: Attendance Form)*



ii. Program Fidelity

Treatment Clubs were to implement SBG for elementary youth Club-wide, allot at least three hours of program instruction/facilitation daily, and complete at least five of the six program modules. Taken together, these three criteria constituted a metric of program fidelity

Table 6. *Fidelity of SBG Implementation, by SBG Program Experience*

Met Fidelity Criteria	All Clubs (N=25)	*With* Prior SBG Experience (N=12)	*Without* Prior Experience (N=13)
Club-wide Implementation	15 60%	8 67%	7 54%
Module Completion	24 96%	11 92%	13 100%
Program Instructional Hours	14 56%	9 75%	5 39%
Total Program Fidelity	*8* *32%*	*5* *41%*	*3* *23%*

Data source: 2015 Program Implementation Survey – Treatment Clubs

Approximately one-third of all treatment Clubs (8 Clubs or 32%) implemented elementary SBG in accordance with all three fidelity criteria (Table 6). The data in Table 6 show that only 1/3 of the Clubs met all 3 fidelity criteria far fewer Clubs implemented elementary SBG Club-wide and for three or more hours a day – that is why.

When looking at the fidelity criteria individually, adherence was much greater. All but one treatment Club completed at least five of the six program modules (96%) and proportionately fewer implemented elementary SBG Club-wide (60%) and with the required amount of program instructional time (56%). Furthermore, Clubs with prior SBG experience were more likely to implement SBG with fidelity.

BGCA also provided Clubs with recommended guidelines for optimal program planning and implementation, including:

- Providing designated time for program instructors to review program books and activities,
- Allotting 45 minutes daily for program preparation, and
- Acquiring all required materials at least two weeks prior to program facilitation.

Clubs with prior SBG experience were better program implementers. They were much more likely to implement with fidelity and complete all six program modules, and almost twice as likely to offer three or more program instructional hours.

When Clubs were asked the extent to which these guidelines were put into practice, the findings showed that:

- On average, across all treatment Clubs, program instructors spent approximately 55 minutes daily to prepare for SBG activities—more than the BGCA-recommended 45 minutes of preparation per day.
- Among Clubs with prior SBG experience, the average daily preparation time was lower (44 minutes) and closer to the BGCA recommended time. Clubs with no prior SBG experience showed a substantially higher average daily prep time (64 minutes) for program instructors.
- Across all modules, less than half (47%) of the program instructors indicated they had enough preparation time during their workday – including reading all of the needed books, reviewing module activities, and prepping the program space.
- In addition, while most program instructors reported having all of the materials required to implement the program modules, more than a third (37%) did not. Comments from both Club leadership and program instructors suggest that the acquisition of books used in the program modules did not always occur prior to the start of the program.

BGCA also communicated guidelines on the use of specific program facilitation strategies to ensure the application of the four essential project-based learning practices – engage, express, evaluate, and exhibit – within the program activities. Data from the *Weekly Implementation Logs* showed that the great majority of SBG instructors used these project-based learning practices to facilitate the program modules with youth (Table 7).

Table 7. *SBG Program Facilitation*

Project Based Learning Practices		Used Practice	Practice Worked Extremely Well*
Engage	Asked open-ended questions	98%	42%
	Connected activities to participant experiences	92%	46%
	Connected activities to facilitator experiences	85%	43%
Express	Encouraged youth voice and choice	96%	49%
	Used brainstorming	97%	43%
	Worked in small, cooperative learning groups	93%	42%
Evaluate	Facilitated or encouraged group discussions	93%	39%
	Implemented peer feedback	75%	36%
Exhibit	Displayed work or products	86%	59%
	Engaged youth in group presentations, performances, or other ways	85%	48%

Respondents rated the extent to which each practice worked on a 3-point scale: extremely well, moderately well, not well at all.

Data source: 2015 Weekly Instructor Logs

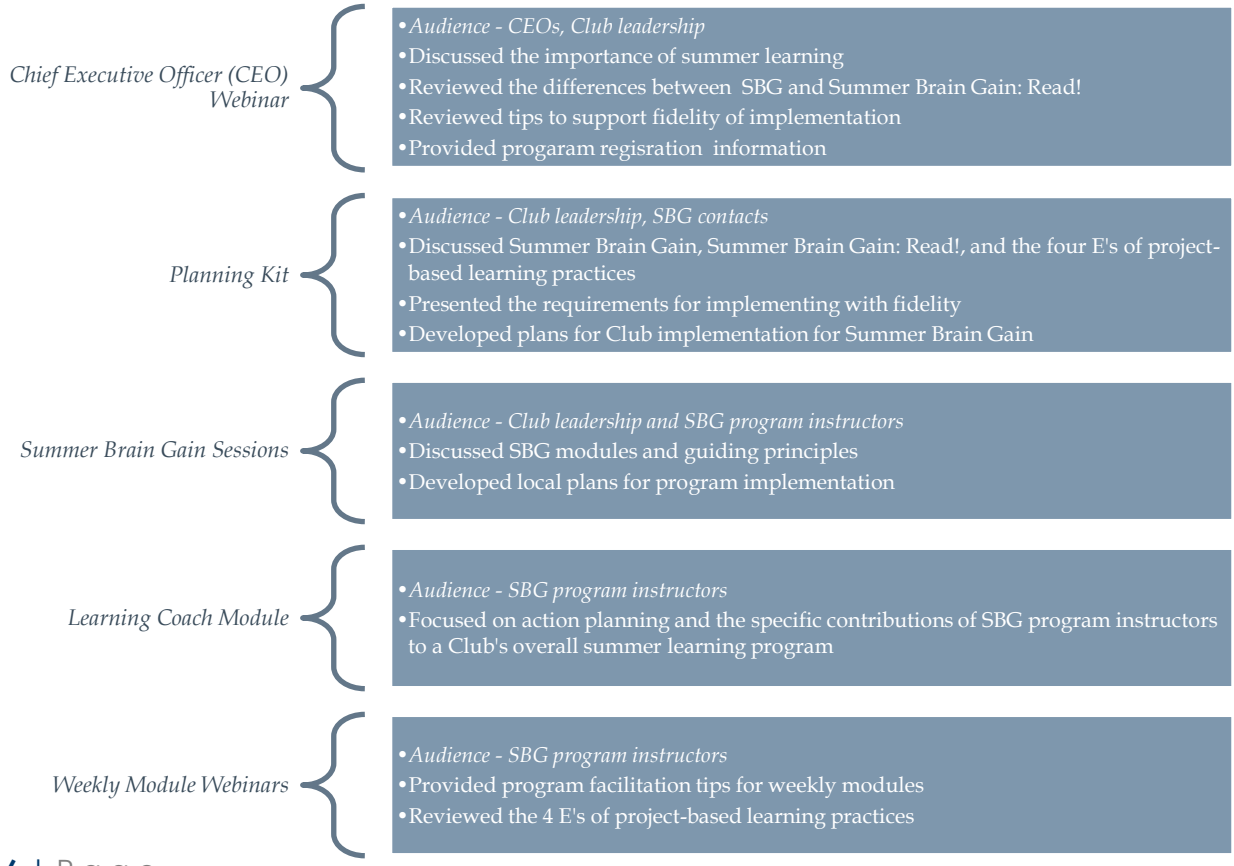
Across all modules, open-ended questioning and brainstorming were used most often (98% and 97%, respectively), while implementing peer feedback was used much less frequently (75%). When looking at these data for the individual modules, some practices showed considerable variation, including:

- For connecting activities to personal experiences, use was greatest for Module 1 (*The Power of Collaboration*) and notably less for Module 6 (*Race to the Future*) (97% and 67%, respectively)
- Instructors engaged youth in peer feedback most often within Module 1 (*The Power of Collaboration*) and notably less so for Module 5 (*Fit for Life*) (83% and 64%, respectively)
- Display of work products was used most frequently within Module 6 (*Race to the Future*) (96%) and much less likely with Module 3 (*One Bright Idea about Another*) (78%) and Module 5 (*Fit for Life*) (74%)

iii. Program Orientation, Training, and Implementation Technical Assistance

In 2015, BGCA launched a comprehensive set of program orientation and training opportunities for Clubs implementing Summer Brain Gain (Figure 3).

Figure 3. *Overview of 2015 SBG Orientation, Training, and Technical Assistance Resources*



Among the training activities relevant to Club leadership, the treatment Clubs most frequently attended the CEO Webinar, and more than half used the Planning Kit and designated a program Learning Coach (Table 8). Among all training activities, the Planning Kit was most helpful to Club leadership with respect to developing program implementation plans, understanding the principles of project-based learning, and becoming steeped in the program's requirements for fidelity.

Clubs with prior SBG experience were somewhat more likely to have used a SBG Learning Coach than were new Clubs (58% vs. 46%, respectively).

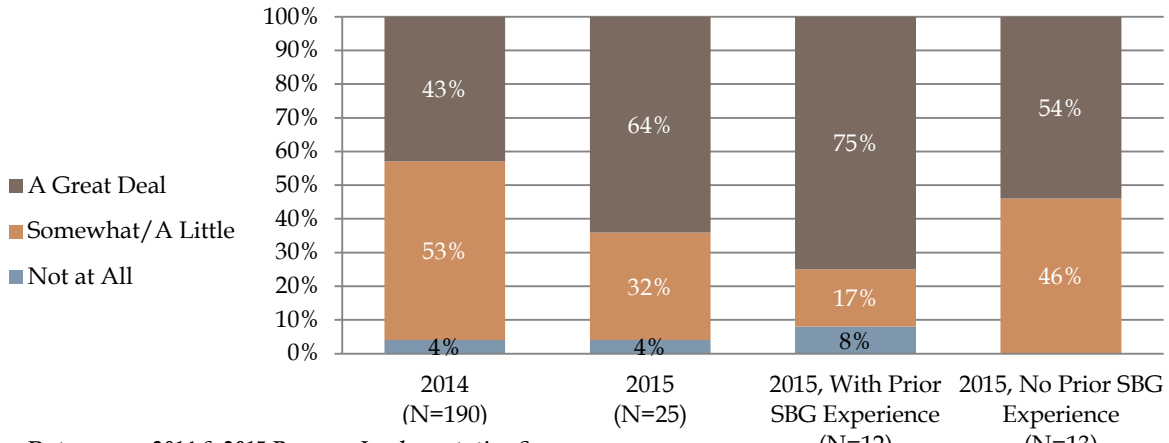
Table 8. *Use of Club Leadership Training Activities and Resources, 2015*

Training Activities	All Treatment Clubs (N=25)	Clubs with SBG Experience (N=12)	Clubs with No SBG Experience (N=13)
CEO Webinar	88%	92%	85%
Planning Kit	56%	58%	54%
SBG Program Learning Coach	52%	58%	46%
Summer Brain Gain Sessions	44%	50%	39%

Data Source: 2015 Program Implementation Survey

Almost two thirds of the treatment Clubs (64%) highly rated the extent to which BGCA provided clear expectations for the implementation of SBG, compared to just 43% of Clubs in 2014 (Figure 4). In addition, Figure 4 shows that Clubs with prior SBG experience provided much higher ratings for BGCA-provided expectations compared to new implementation Clubs (75% vs. 54%, respectively). Similarly, a greater percentage of 2015 Clubs rated the quality and frequency of communication with BGCA anywhere from good to excellent than did 2014 Clubs (71% vs. 63%, respectively) (Figure 5).

Figure 4. *Club Understanding of BGCA Expectations for SBG Program Implementation, by Evaluation Year*



Data source: 2014 & 2015 Program Implementation Survey

Figure 5. *Club Satisfaction with Communication with BGCA, by Evaluation Year*

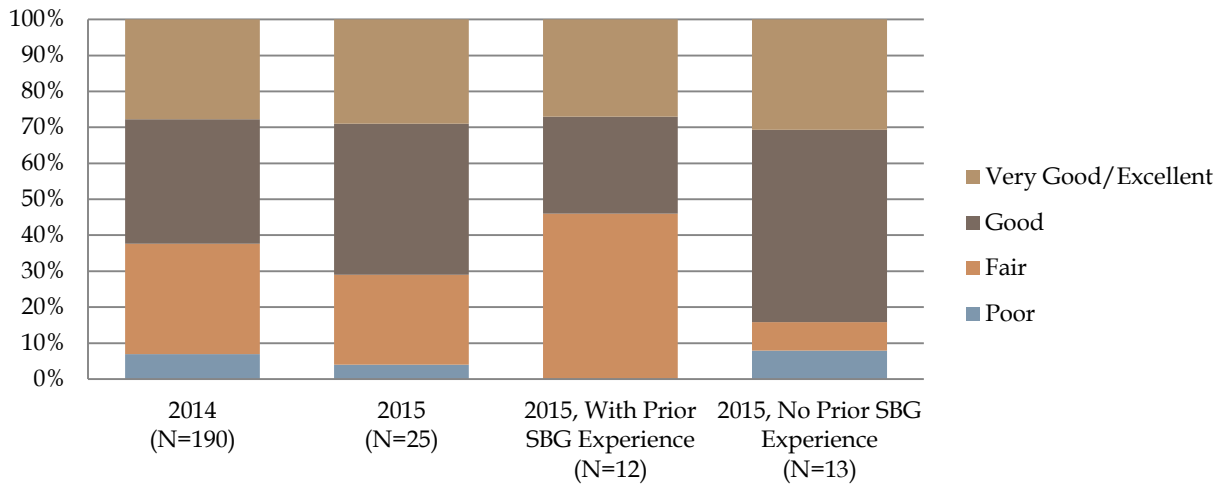
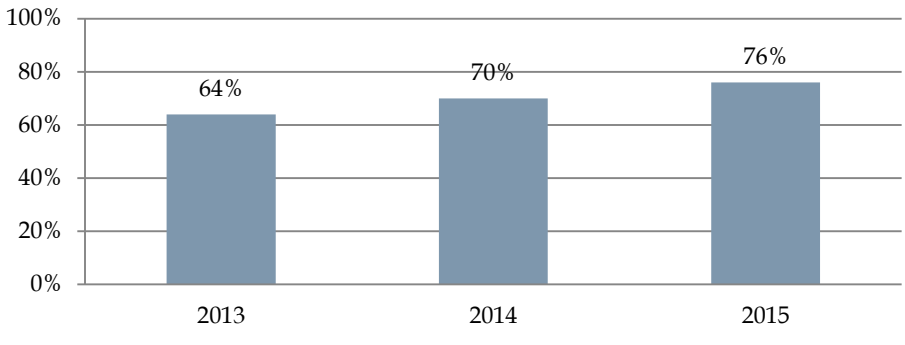


Figure 5 also shows that leadership at Clubs with prior SBG experience were somewhat less satisfied with the overall quality of communication with BGCA, compared to new implementation Clubs. For example, 46% of those with previous SBG implementation experience rated communication as just fair, compared to less than 10% of Clubs with no prior implementation experience.

In addition, Club interest in future SBG implementation has increased steadily since the start of the program in summer 2013, from 64% in 2013 to 76% in 2015 (Figure 6).

Figure 6. *Club Interest in Future SBG Implementation, by Evaluation Year*

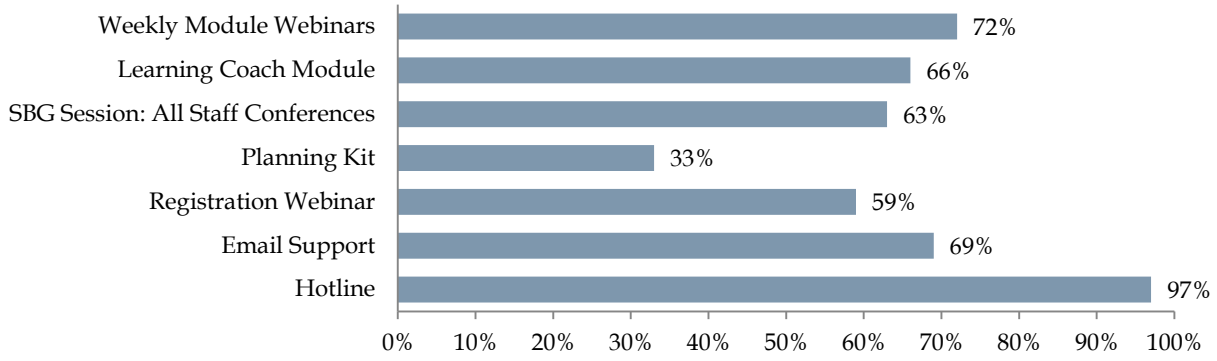


Data source: 2013, 2014l, & 2015 Program Implementation Survey

iv. Program Instructor Training and Technical Assistance

In 2015, BGCA offered program instructors a full complement of training and technical assistance resources to help facilitate Summer Brain Gain with fidelity (Figure 7). While almost all of the SBG instructors used the program Hotline (97%), more than two thirds also attended the Weekly Module Webinars (72%), received email support (69%), and participated in the Learning Coach Module (66%).

Figure 7. *Use of SBG Training and Technical Assistance Resources*



Data source: 2015 Program Instructor Logs

When asked what additional training or assistance BGCA could provide to ensure that program instructors received the right level of training to support program fidelity, their suggestions included the following (N=12 Clubs):

- Provide additional training – beyond the online webinar – on the specifics of SBG implementation (e.g., activities, lessons, subject areas), including video classroom implementation examples (5 Clubs, 42%)
- Expand the program's technical assistance resources to include a Google doc with the websites for each module as well as a complete set of required materials for each module (4 Clubs, 33%)
- Provide Clubs with program resource materials (such as the Planning Kit and the Learning Coach Module) as early as January or February to facilitate the incorporation of SBG-specific training and orientation within the Club's regular summer preparation time (4 Clubs, 33%)

v. Main Implementation Successes & Challenges

Club leadership rated the extent to which their Club implemented various aspects of SBG without trouble, using a four-point scale that ranged from very easy to very challenging (Table 9). In addition, program instructors provided information about successes and challenges with implementing the program modules.

Table 9. *2015 Elementary SBG Implementation*
Percentage of Clubs that Indicated Very or Somewhat Challenging

	All 2015 Clubs (N=25)	*With* Prior SBG Experience (N=13)	*Without* Prior SBG Experience (N=12)
Use of project-based learning principles	12%	17%	8%
Program facilitation strategies	28%	33%	23%
Costs of program materials	36%	25%	46%
Accessibility of program materials (books)	56%	42%	69%
Amount of prep time	48%	58%	38%
Amount of evaluation activities	44%	33%	54%
Amount of daily instructional time	68%	83%	54%
Adherence to weekly module schedule	40%	42%	38%

Data source: 2015 Program Implementation Survey – Treatment Clubs

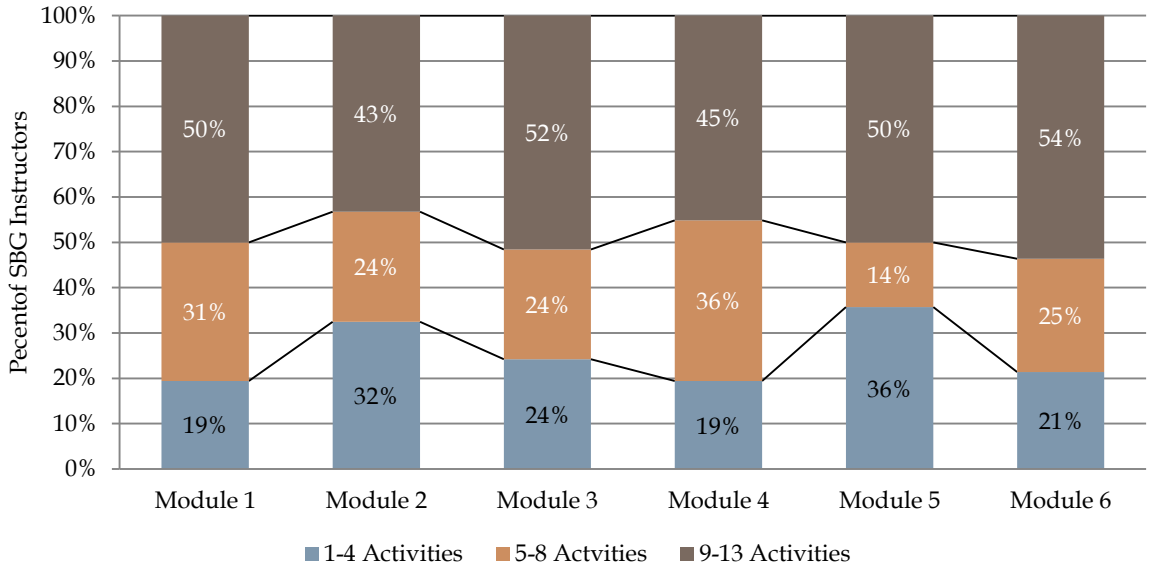
Taken together, these data showed that:

- The majority of all treatment Clubs easily incorporated project-based learning principles within program instruction (88%) and used the SBG facilitation strategies (72%).
- While most Clubs easily absorbed the costs of the program materials (64%), many still experienced challenges with accessing the program materials (56%). Further, Clubs *with* prior SBG experience were substantially more likely to have easily supported the program material costs and accessibility of materials for program instructors than were Clubs *without* prior implementation experience.
- Regarding the amount of time needed for program preparation and the required evaluation activities, the data showed mixed results. For example, while a little more than half of the Clubs easily provided program instructors with the necessary daily prep time (52%), the remaining Clubs (48%) did find this challenging.

*While a greater percentage of 2015 Clubs were **unchallenged** by the costs of program materials in comparison to 2014 (64% vs. 47%, respectively), accessibility of program books and materials continued to be an issue (as in 2014).*

- Moreover, while somewhat counterintuitive, Clubs *with* prior SBG implementation experience were more likely to be challenged by the amount of program prep time, than were the new implementation Clubs (58% vs. 38%, respectively).
- The opposite was true for the evaluation activities, where more than two thirds of Clubs *with* prior implementation experience found this easy (67%), compared to less than half of the new implementation Clubs (46%).
- While most Clubs followed the weekly module schedule (60%), the amount of daily instructional time was the greatest implementation challenge for all treatment Clubs (68%).
- The difficulty with providing the required amount of program instructional may have affected the extent to which the program facilitators completed the 13 activities that comprised the weekly program modules, which varied considerably (Figure 8). For any given module, about half of instructors completed only eight or fewer activities. In addition, many program instructors reported that timing of the module activities were often too short or too long or generally inconsistent with the amount of dedicated daily instructional time.

Figure 8. *Number of Activities Completed by Module*



- Finally, from the perspective of the program instructors the program modules that worked most successfully offered youth engaging and creative content/themes, and featured opportunities for the youth to work in group activities and projects, particularly those with well-liked stories and books and hands-on learning.

- On the other hand, program instructors cited some additional challenges to module implementation including:
  - The module content and/or activities were not always age-appropriate for both the lower and upper elementary youth (31%)
  - Youth were sometimes bored, disinterested, or not engaged in the module activities (24%)
  - Specific module themes or daily activities were problematic (18%)
  - There were some difficulties with finding or accessing required books, materials, and/or supplies (11%)

B. Program Outcomes

i. Stakeholder Perceptions of Summer Brain Gain

Club leadership rated the extent to which SBG engaged participating youth (Table 10). While almost half the respondents across all treatment Clubs described youth engagement as either above average or excellent (48.0%), for Clubs *with* prior SBG experience the proportion was much greater (66.7%).

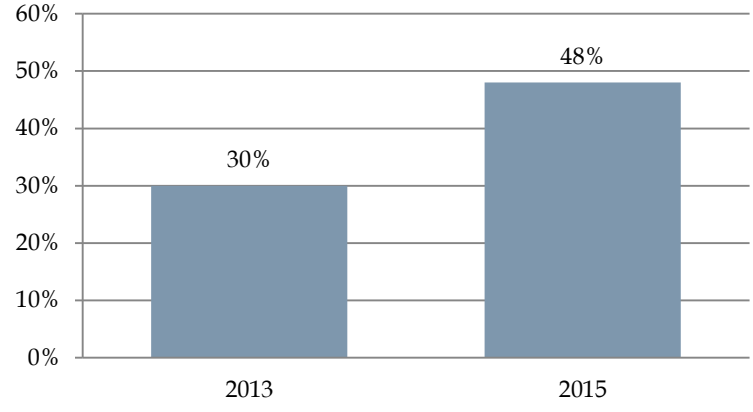
Table 10. *Youth Engagement in SBG Module Activities*

	Excellent or Above Average	Average	Below Average or Poor
All Clubs (N=25)	48%	48%	4.0%
***With* SBG Experience (N=12)**	67%	33%	0.0%
***Without* BG Experience (N=13)**	31%	61%	8%

Data source: 2015 Program Implementation Survey – Treatment Clubs

Moreover, from the perspective of Club leadership, high youth engagement (i.e., ratings of above average and excellent combined) in SBG module activities has increased considerably over time (Figure 9). For example, less than one third of the Club leaders (30%) rated high youth engagement in 2013, compared to almost half (48%) in 2015.

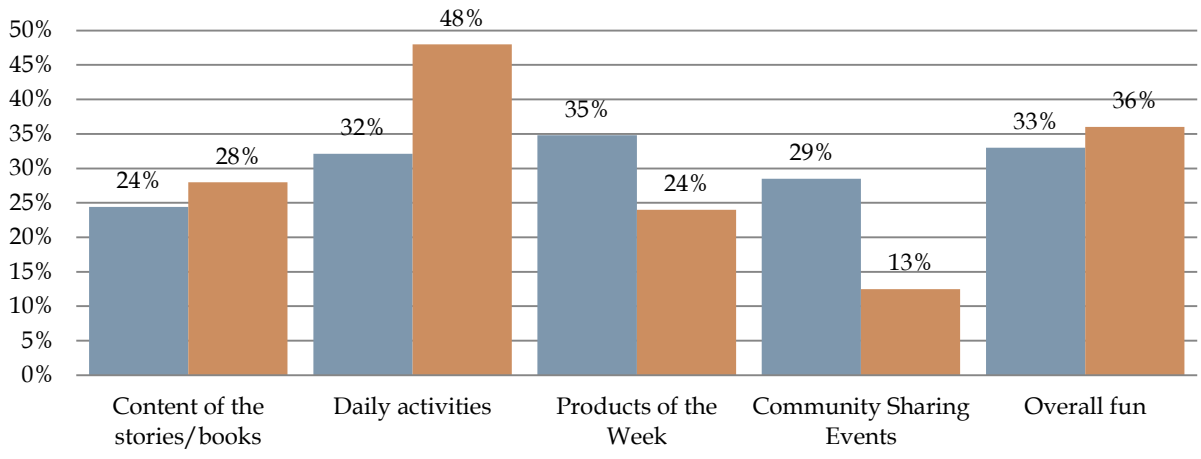
Figure 9. *High Youth Engagement, by Program Year*



Data source: 2013 & 2015 Program Implementation Survey

When asked to rate the extent to which the individual module components appealed to program youth, program instructors and Club leadership showed varying opinions (Figure 10). From the perspective of the program instructors, overall, the SBG program appealed to youth mostly with regard to the products of the week. In contrast, Club leadership believed youth were most interested in the daily activities.

Figure 10. *Perceptions of Youth Interest in SBG Module Components*
Percent of Respondents that Indicated "Very Much"



Data sources: 2015 Weekly Logs, 2015 Program Implementation Survey – Treatment Clubs

Regarding level of youth interest by individual SBG module, Module 6 (*Race to the Future*) consistently received the highest ratings across all program aspects. Program instructors provided many examples of the overall effectiveness of Module 6:

- "*The collaboration of group projects [within this module] was awesome. Youth had to critically think about the future and solving problems. This module had a lot of opportunity for creativity.*"
- "*Overall, this was the module that the members enjoyed the most. They were really engaged and excited about the space/environmental conservation theme.*"
- "*Youth really enjoyed the module activities and became extremely creative when creating their projects.*"

On the other hand, Module 3 (*Making Connections*) received the lowest ratings for youth interest in daily activities, products of the week, community sharing events, and overall fun (19%, 15%, 10%, and 3% respectively). In particular, program instructors struggled with several challenges in facilitating this module, including:

- Application of the module theme and activities with younger participants (particularly those in rising grade 1-3): "*[This module] was way over the younger ones heads. They were very lost.*"

- Incompatibility between the module content and the vocabulary, reading, and writing skills of participating youth, especially for those in the younger age group
- Poor youth interest and participation in module activities, especially the poetry activity: "*Many of the members had not written poems before and really struggled, especially when asked to come up with rhymes for their poetry.*"

In 2015, proportionately fewer program instructors believed the elementary program modules were age-appropriate (67%) compared to their 2014 counterparts (82%).

Overall, more than two thirds of the program instructors believed the age-appropriateness of the SBG modules was about right (67%), followed by 24% too advanced, and 9% too simplistic. Within the individual modules, program instructors most frequently rated Module 4 (*Making Global Connections*) as too advanced (45%), followed by 27% of program instructors for Module 3 (*One Bright Idea After Another*).

Overall, program instructors and Club leadership showed similar perceptions of the quality of the elementary SBG program modules (Table 11).

Table 11. *2015 Quality of the Elementary SBG Program Modules*

	Excellent or Above Average	Average	Below Average or Poor
Program Instructors (N=191)	48%	44%	8%
Club Leadership (N=25)	52%	44%	4%
***With* prior SBG Experience (N=12)**	58%	33%	8%
***Without* prior SBG Experience (N=13)**	46%	54%	0%

Sources: 2015 Weekly Implementation Logs & 2015 Program Implementation Survey – Treatment Clubs

Approximately, half of the program instructors (48%) and Club administrators (52%) rated the quality of the SBG modules as either above average or excellent. However, a much greater proportion of Clubs *with* prior SBG experience highly rated the quality of the SBG modules than did those that were new implementation Clubs (58% vs. 46%, respectively). In addition, when looking at this data by individual module, program instructors were most likely to provide above average and excellent ratings for Module 6 (*Race to the Future*) (64%) and substantially lower for Module 4 (*Making Global Connections*) (just 26%).

ii. Youth Perceptions of Summer Brain Gain

The post-program *Member Survey* asked participating youth to rate various aspects of their overall program experience. Table 12 shows the perceptions of program youth from all

treatment Clubs partitioned by prior SBG implementation (2015) and displays youth opinions from evaluation years 2013 and 2014.

Table 12. *Youth Perceptions of the SBG Program Experience*
Percent of Respondents that Indicated Agreement

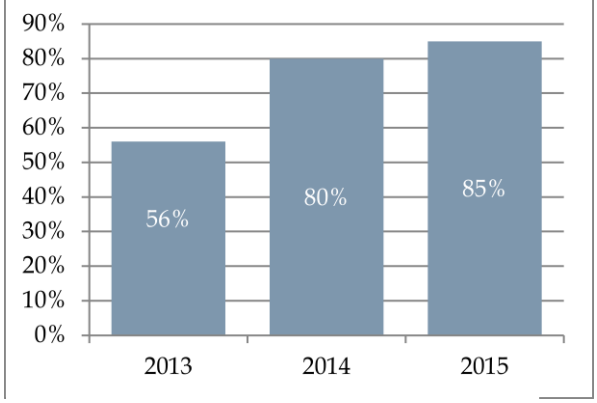
Survey Items (Post-Only)	2013	2014	2015	2015 *With* SBG Experience	2015 *Without* SBG Experience
I enjoyed the group or team activities we did during the SBG program.	62%	81%	86%	85%	87%
Overall, I enjoyed the SBG program.	57%	80%	85%	84%	87%
I got to choose the activities in the SBG program.	NA	59%	57%	51%	66%
I was interested in the SBG activities.	NA	77%	83%	81%	86%
I learned a lot from the SBG program.	67%	56%	61%	62%	60%
I would go to SBG next summer.	NA	40%	44%	44%	43%
I would tell my friends to go to SBG next summer.	52%	43%	48%	50%	46%

Data sources: 2013, 2014, and 2015 Member Surveys

In 2015, across all treatment Clubs, the great majority of youth were interested in the SBG activities (83%) and enjoyed the group activities (86%) and the overall program (85%). Interestingly, youth who attended Clubs without prior implementation experience were more likely to report being able to choose their program activities than were youth from Clubs with prior SBG experience (57% vs. 51%, respectively).

Youth satisfaction with SBG program has increased steadily over time from a little more than half (56%) in 2013 to 85% in 2015 (Figure 11).

Figure 11. *Percent of Youth Satisfied with SBG, by Evaluation Year*

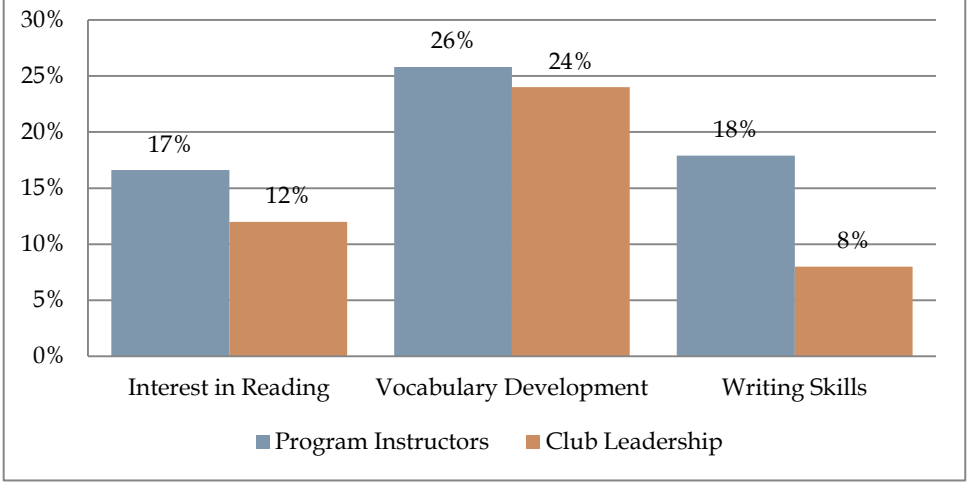


Data source: 2013, 2014, and 2015 Member Survey

iii. Stakeholder Perceptions of Program Impact

Regarding **English language arts skills**, from the perspective of instructors and Club leadership, participating youth showed the most positive changes in their vocabulary development due to SBG participation (Figure 12). For Clubs *with* prior SBG experience, the perceived improvement in vocabulary skills was even greater (33.3%).

Figure 12. *Observed Positive Changes in English Language Arts*
Percent of Respondents that Indicated "Very Much"



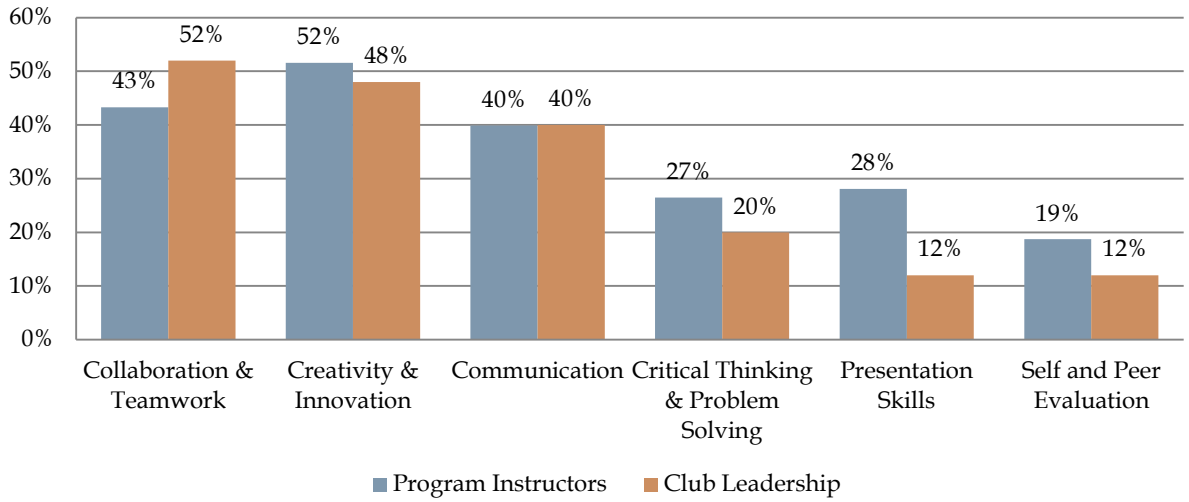
Data source: 2015 Program Implementation Survey

There were also some notable differences when looking at program instructor perceptions of change in English language arts by individual module, including:

- Module 6 (*Race to the Future*) had the greatest positive impact on youth interest in reading (31%), while Module 4 (*Making Global Connections*) showed the least (only 3%).
- Module 3 (*One Bright Idea after Another*) and Module 6 (*Race to the Future*) were most likely to help youth in vocabulary development (34% and 33%, respectively), while Module 2 (*Hooray for Heroes*) showed the least (17%).
- Module 6 (*Race to the Future*) showed a higher impact on the writing skills of participating youth (25%) than did all of the other modules.

Regarding the development of **21st century skills** of participating youth, the data showed mixed perceptions from program instructors and Club leadership (Figure 13).

Figure 13. *Observed Positive Changes in 21st Century Learning Skills*
Percent of Respondents that Indicated "Very Much"



Data sources: 2015 Weekly Instructor Logs, 2015 Program Implementation Survey – Treatment Clubs

Observed growth in the teamwork and collaboration skills of participating youth has increased substantially over time – from 26% in 2013 to 32% in 2014 to over half in 2015 (52%).

For both groups, the largest observed positive changes were in the areas of creativity and innovation and collaboration/teamwork, followed by communication. Club leadership, however, was somewhat more likely to have reported growth in collaboration and teamwork than were the program instructors (52% vs. 43%, respectively). In addition, while viewed less frequently as a growth area overall by both groups, program instructors were more likely to have reported positive changes in the areas of critical thinking and problem solving and presentation skills.

When looking at these data by prior experience with SBG implementation, there were stark differences between the two respondent groups of Club leaders (Table 13).

Table 13. *Observed Positive Changes in 21st Century Learning Skills, by Club SBG Experience*
Percent of Club Leadership that Indicated "Very Much"

	All Clubs (N=25)	*With* SBG Experience (N=12)	*Without* SBG Experience (N=13)
Collaboration & teamwork	52%	58%	46%
Creativity & innovation	48%	50%	46%
Communication	40%	58%	23%
Critical thinking & problem solving	20%	33%	8%
Presentation skills	12%	25%	0%
Self and peer evaluation	12%	25%	0%

Data source: 2015 Program Implementation Survey – Treatment Clubs

In almost all areas, Clubs *with* prior experience with SBG implementation reported substantially greater development in 21st century learning skills among participating youth, than did the new implementation Clubs. This is likely attributable to the greater program fidelity evidence among the more experienced SBG Clubs.

There were also notable differences when looking at program instructor perceptions of changes in 21st century skill development by individual program module, including:

- Module 1 (*The Power of Collaboration*) helped youth most in the area of collaboration and teamwork (54%), while Modules 4 (*Making Global Connections*) and 5 (*Fit for Life*) seemed to have helped youth the least in this area (30% and 27%, respectively).
- Module 3 (*One Bright Idea after Another*) and Module 6 (*Race to the Future*) showed the greatest positive changes in creativity and innovation (61% and 71%, respectively), while Module 4 (*Making Global Connections*) helped youth the least (24%).
- Module 3 (*One Bright Idea after Another*) and Module 6 (*Race to the Future*) showed a higher impact on critical thinking and problem solving skills of participating youth (42% and 43%, respectively), particularly compared to Modules 4 (*Making Global Connections*) and 5 (*Fit for Life*), which showed the least impact (14% and 18%, respectively).
- Module 2 (*Hooray for Heroes*) helped youth most with presentation skills (38%), while Module 5 (*Fit for Life*) showed the least impact in this area (13%).
- Module 6 (*Race to the Future*) showed the greatest positive change with respect to self and peer evaluation (29%), while Modules 4 (*Making Global Connections*) and 5 (*Fit for Life*) helped youth much less (8% and 8%, respectively).

iv. Program Impact on Members' Reading Interest in Reading, 21st Century Skills, and Other Areas

To assess the impact of elementary SBG on member interest in reading and 21st century skill development, the evaluation summed select items from the Member Survey to create five (5) sub-scores:

- Interest in reading
- 21st century skills
- Working in groups
- Coping

– Persistence

To determine if there were notable differences in interest in reading between treatment and control youth, Analyses of Covariance (ANCOVA) compared the posttest sub-scores, while controlling for their pretest sub-scores (Table 14).[3]

Table 14. *Member Survey – Interest in Reading Sub-Score Analysis of Covariance (ANCOVA) Results*

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest Mean Adjusted for the Pretest Mean)	Marginal Mean Difference	p-value
Treatment	255	5.5	5.6	5.7	-0.3	0.036 *
Control	236	5.6	6.0	6.0		

Denotes statistical significance

The data in Table 14 show that:

- Treatment and control group youth had a comparable interest in reading at the time of the pretest (5.5 and 5.6, respectively).
- After controlling for differences in their average reading scores (i.e., the estimated marginal posttest mean adjusted for their pre-reading score on the STAR assessment), treatment youth showed significantly lower interest in reading than did their control group peers. This finding supports the perception of program instructors and Club leadership of the minimal program impact on youth in this area.

Similar ANCOVA analyses compared the posttest sub-scores for 21st century learning skills, working in groups, coping skills, persistence, and coping with challenge for both treatment and control youth, while controlling for their respective pretest sub-scores (Table 15). Treatment youth showed significantly lower coping skills and lower ability to cope with challenges than did their control group peers. While also favoring the control group, none of the observed differences in 21st century learning skills, working in groups, and persistence were statistically significant.

[3] Note that treatment and control groups were likely not equivalent at baseline due to high attrition in both groups. While the ANCOVA analysis used pretest scores to account for initial differences, it is feasible that other differences between the groups (e.g., demographics) may account for the observed differences. As such, the reader should interpret these results with some caution.

Table 15. *Member Survey – 21st Century Learning, Group Skills, and Other Sub-Scores*
Analysis of Covariance (ANCOVA) Results

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
21st Century Skills						
Treatment	255	7.0	7.0	7.0	-0.3	0.089
Control	236	7.0	7.3	7.3		
Working in Groups						
Treatment	255	8.2	8.4	8.4	-0.1	0.710
Control	234	8.4	8.5	8.5		
Coping skills						
Treatment	255	9.6	9.8	9.8	-0.7	0.004 *
Control	234	9.7	10.6	10.5		
Persistence						
Treatment	255	11.1	10.5	10.6	-0.4	0.189
Control	234	11.4	11.0	10.9		
Coping with Challenge						
Treatment	255	17.0	16.7	16.8	-1.0	0.003 *
Control	234	17.4	17.9	17.9		

**Denotes statistical significance*

C. Program Impacts & Academic Outcomes

In preparation for impact analyses, a longitudinal analysis of STAR assessment data for the Summer Brain Gain participants (treatment group) was conducted (Table 16).

Table 16. *STAR Assessment Results*
t-Test Results for Treatment Clubs

Subject and Grade Group	Matched N	Pretest Mean	Posttest Mean	Mean Difference	p-value
Early Literacy (Grades 1-3)	189	744.7	775.4	+30.7	0.001*
Reading (Grades 4 & 5)	163	363.0	360.0	-3.1	0.785
Math (Grades 4 & 5)	141	579.3	576.6	-2.6	0.785

Denotes statistical significance

As shown in Table 16, an investigation within the treatment group revealed that younger Brain Gain participants (rising in grades 1-3) achieved statistically significant gains in their average early literacy performance from pretest to posttest. While the same gains were not evident for older participants (rising grades 4 and 5) in reading or math, these youth did not experience significant learning loss from pre to post in either subject area.

i. Impact Analysis (Treatment vs. Control)

Using data collected with the evaluation attendance rosters, the Metis team conducted Hierarchical Linear Model (HLM) analyses to account for participant and Club factors that might influence STAR outcomes for program youth that had matched pre- and posttest scores. The two-level HLM models nested youth within Clubs and included pre-test score, participant race, gender, eligibility for free/reduced price meals, and days attended as covariates at the

youth level. Table 17 presents a summary of the analyses for each STAR assessment – early literacy, reading, and math. (Attachment 3 to this report includes additional technical details of the HLM analyses. Attachment 4 includes additional summary statistics for the baseline and analytic samples for each of the three analyses.)

Table 17. *HLM Results Summary*

Subject Area	Sample Size	Unadjusted Posttest Means		Regression-Adjusted Posttest Means		Estimated Impact	Effect Size in Hedge's g	*p*-value
		Control	*Treatment*	*Control*	*Treatment*			
Early Literacy (Grades 1-3)	330	763.16	775.37	758.52	775.82	17.299	0.179	0.177
Reading (Grades 4 & 5)	339	370.84	359.99	366.85	366.33	-0.518	-0.002	0.980
Math (Rising Grades 4 & 5)	272	532.33	576.65	538.69	579.52	40.825	0.268	0.082

Denotes statistical significance

The data in Table 17 show no statistically significant impacts for any of the STAR assessments. However, while not statistically significant, the observed effect size (in Hedge's g) for math indicates that the finding was substantively important.[4]

ii. Dosage Analyses (Within Treatment)

Next, Metis conducted a series of exploratory dosage analyses to determine if particular implementation conditions were associated with better academic outcomes for participating youth in early literacy, reading, and math.

Program Attendance

To determine the possible effects of program attendance on STAR outcomes within the treatment group, Metis used empirical data for each assessment (early literacy, reading, and math) to establish "natural" cut points to designate youth as having either "high" or "low" attendance. Mean days attended was calculated based on available data for the treatment participants with matched scores on each STAR assessment. For math and reading, the average program days attended was 22, and for early literacy, the mean was 21. Since approximately half of the distribution of days attended fell below 22 days for all three groups, this served as the cut point to categorize treatment youth as either high or low attenders for the three assessments.

[4] A substantively important finding shows an effect size of 0.25 standard deviations regardless of whether it reaches statistical significance.

ANCOVA analyses compared the posttest scores of these attendance groups while controlling for their pretest scores (Table 18). While low attenders significantly outperformed their high attending peers in early literacy, no significant differences were evident for reading or math.

Table 18. *STAR Assessment Results with Participant Attendance*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Low (22 or less days)	83	766.1	800.9	793.6	-39.2	0.009 *
High (more than 22 days)	72	707.9	746.0	754.4		
Reading						
Low (22 or less days)	59	362.4	383.6	385.3	-35.1	0.170
High (more than 22 days)	77	366.0	351.4	350.2		
Math						
Low (22 or less days)	47	553.7	551.4	565.9	+11.2	0.636
High (more than 22 days)	58	590.3	588.9			

Denotes statistical significance

Prior Club Experience with SBG Implementation

Of the 24 treatment Clubs that administered STAR assessments, 11 had implementation experience with SBG in one of the prior program years. Metis conducted ANCOVA analyses to determine if prior implementation of SBG would show notable differences in participant academic outcomes when compared to Clubs with no prior program experience while controlling for participant pretest scores (Table 19). The results of the analysis show that prior experience was associated with statistically significant higher performances in early literacy and math, but not in reading.

Table 19. *STAR Assessment Results with Prior Club Experience*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Without SBG experience	94	774.2	770.7	759.8	+31.1	0.022 *
With SBG experience	95	715.6	780.0	790.8		
Reading						
Without SBG experience	89	346.1	343.7	357.5	+5.5	0.802
With SBG experience	74	383.5	379.6	363.0		
Math						
Without SBG experience	73	573.5	549.8	553.9	+47.1	0.010 *
With SBG experience	68	585.4	605.5	601.0		

Denotes statistical significance

Program Fidelity

As described earlier in this report, using several items from the *Program Implementation Survey* for treatment Clubs, an overall program fidelity score determined if Club implementation of the SBG curriculum as directed had positive academic impacts on participating youth. Clubs implemented with fidelity if they (1) implemented the curriculum club-wide; (2) implemented the curriculum for at least 3 hours daily; and (3) implemented at least five of the six curriculum modules. Eight of the 24 treatment Clubs[5] that administered STAR assessments met all three fidelity criteria. For each individual criterion, this included:

- 14 Clubs that implemented the curriculum Club-wide
- 13 Clubs that provided at least 3 hours of daily program instruction
- 22 Clubs that implemented at least 5 of the 6 curriculum modules

Metis conducted ANCOVA analyses that controlled for pretest scores to determine whether differences in posttest STAR scores emerged based on whether clubs implemented the program curriculum with fidelity (Table 20). The data in Table 20 show no statistically significant results for all three assessments.

Table 20. *STAR Assessment Results with Program Fidelity*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Without fidelity	117	741.0	773.7	775.2	+1.9	0.893
With fidelity	62	753.7	779.9	777.1		
Reading						
Without fidelity	105	346.4	345.3	356.9	+3.0	0.902
With fidelity	50	390.4	384.2	359.9		
Math						
Without fidelity	86	565.7	554.0	561.5	+31.4	0.112
With fidelity	48	593.4	606.3	592.9		

Denotes statistical significance

Further analyses determined whether the separate components of program fidelity as defined were associated with differences in outcomes. Metis conducted a series of ANCOVAs controlling for pretest STAR performance to compare Clubs that implemented Club-wide to those that did not (Table 21), and Clubs that implemented for at least three hours daily to those that implemented for less than three hours[6] (Table 22).

[5] One (1) Club did not complete the survey and therefore did not receive a fidelity score.
[6] Since the majority of treatment Clubs (22 out of 24) implemented five of the six modules, comparative analyses were not conducted for this component of the fidelity metric.

Table 21. *STAR Assessment Results with Club-wide Implementation*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Did not implement Club-wide	77	746.6	751.9	751.5	+42.8	0.002 *
Implemented Club-wide	102	744.5	793.9	794.2		
Reading						
Did not implement Club-wide	70	357.4	367.9	370.4	-22.9	0.318
Implemented Club-wide	85	363.1	349.7	347.6		
Math						
Did not implement Club-wide	56	554.3	548.9	565.0	+13.2	0.467
Implemented Club-wide	78	590.9	589.8	578.2		

Denotes statistical significance

Table 22. *STAR Assessment Results with Temporal Implementation*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Did not provide 3 hours daily	73	763.9	797.5	791.6	-26.6	0.060
Provided 3 hours daily	106	732.7	760.9	765.0		
Reading						
Did not provide 3 hours daily	54	349.8	321.6	330.4	+42.2	0.076
Provided 3 hours daily	101	366.3	377.3	372.6		
Math						
Did not provide 3 hours daily	37	580.3	553.2	549.7	+31.9	0.131
Provided 3 hours daily	97	573.8	580.2	581.5		

**Denotes statistical significance*

The results of these analyses showed that youth who attended Clubs that implemented the curriculum club-wide performed significantly better on the STAR early literacy assessment than those that did not. Further, while there were no significant effects observed for daily instructional time, the results from the early literacy and reading analyses *approached* significance (p-values of 0.060 and 0.076, respectively), suggesting that better outcomes may be differentially associated with time. In particular, youth who attended Clubs that provided three or more hours of program instruction appeared to do poorer on early literacy, while the opposite was true for reading (and math).

iii. Exploratory Analyses Based on Fidelity Components

Additional analyses explored the potential association between differences in implementation and age/grade groups (e.g., rising grades 1-3 and rising grades 4 and 5) within the treatment participants. Of particular interest was: (1) whether less time/more time devoted to daily program instruction would have differential effects for the different age groups; and (2) whether better or worse outcomes were associated with Clubs implementing five vs. all six modules. Summary statistics determined there were sufficient numbers of cases to conduct these additional analyses:

- 6 of the 24 Clubs provided program instruction for 2 or less hours daily
- 6 of the 24 Clubs provided program instruction for 3.5 or more hours daily[7]
- 17 of the 23 Clubs implemented all six (6) curriculum modules

Tables 23-25 show the results of the ANCOVA analyses for these new, adjusted implementation criteria.

Table 23. *STAR Assessment Results with Temporal Implementation*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

Subject Area	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Implemented 2.5 hours or more	134	746.8	761.9	761.4	+57.4	0.000 *
Implemented 2 hours or less	45	741.4	817.5	818.8		
Reading						
Implemented 2.5 hours or more	129	364.0	362.3	359.5	-9.8	0.747
Implemented 2 hours or less	26	343.6	335.9	349.7		
Math						
Implemented 2.5 hours or more	117	561.2	555.9	566.4	+49.5	0.092
Implemented 2 hours or less	17	674.8	688.6	615.9		

**Denotes statistical significance*

[7] While the intention was to compare clubs implementing 4 or more hours daily to those that implemented less than 4 hours, only four of 24 Clubs implemented for 4 or more hours daily resulting in an insufficient number of cases to conduct the analysis.

Table 24. STAR Assessment Results with Temporal Implementation
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

Subject Area	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Implemented 3 hours or less	118	733.7	773.0	776.9	+3.1	0.834
Implemented 3.5 hours or more	61	768.0	781.3	773.8		
Reading						
Implemented 3 hours or less	102	347.1	328.1	338.9	+55.6	0.020 *
Implemented 3.5 hours or more	53	386.5	415.3	394.5		
Math						
Implemented 3 hours or less	81	563.5	554.5	563.7	+22.9	0.239
Implemented 3.5 hours or more	53	594.2	600.6	586.6		

Denotes statistical significance

Table 25. *STAR Assessment Results with Curriculum Modules*
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Implemented 5 modules	39	752.3	736.7	734.4	+53.0	0.001 *
Implemented 6 modules	140	743.5	786.7	787.4		
Reading						
Implemented 5 modules	45	370.8	320.2	311.8	+64.9	0.009 *
Implemented 6 modules	110	356.4	373.3	376.7		
Math						
Implemented 5 modules	36	548.7	487.1	505.8	+90.2	0.000 *
Implemented 6 modules	98	585.5	604.2	596.9		

Denotes statistical significance

Taken together, the results of these analyses showed that:

- For early literacy, youth who received less instructional time (2 hours or less) outperformed those who received more instruction (Table 23);
- Youth who received 3.5 hours or more of instruction daily showed significantly higher results in reading than did their peers who received less (Table 24); and
- For all three subjects (early literacy, reading, and math), youth who attended Clubs that implemented all six program modules fared significantly better than youth from Clubs that implemented five program modules (Table 25).

iv. Alternate Fidelity Standards: Revising the Logic Model

Given the findings describe above, an alternate set of age-specific fidelity metrics were created for rising grades 1-3 (early literacy) and for rising grades 4 and 5 (reading and math). For early literacy, the new program fidelity criteria included:

- Implemented the curriculum club-wide;
- Provided instruction for 2 hours or less daily; and
- Implemented all six curriculum modules.

For reading and math, the new program fidelity included:

- Implemented the curriculum for 3.5 or more hours daily; and
- Implemented all six curriculum modules.

Applying these new fidelity standards to the 24 2015 treatment Clubs, the data showed that 3 Clubs met the criteria for rising grades 1-3 and 4 Clubs met the new fidelity criteria for rising grades 4 and 5. To test the potential effectiveness of the new fidelity metric, ANCOVA results conducted comparing STAR posttest scores while controlling for pretest differences are presented in Table 26. For all subject areas, youth who attended Clubs that implemented with fidelity based on the new customized metric performed significantly better than those who attended Clubs that did not.

Table 26. STAR Assessment Results with Customized Program Fidelity
Analysis of Covariance (ANCOVA) Results for Treatment Clubs

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Without new fidelity	146	749.9	764.5	763.0	+69.8	0.000 *
With new fidelity	33	725.6	825.9	832.7		
Reading						
Without new fidelity	119	354.0	329.7	334.9	+98.8	0.000 *
With new fidelity	36	382.1	451.1	433.8		
Math						
Without new fidelity	97	571.1	553.4	556.9	+57.4	0.006 *
With new fidelity	37	587.5	623.3	614.3		

Denotes statistical significance

These findings suggest that implementing SBG according to the new program fidelity criteria may result in better outcomes for youth. Therefore, BGCA and Metis revised the original program logic model to include modified program fidelity criteria accordingly for summer 2016, as shown in the updated SBG logic model for the elementary school modules below (Figure 14).

Figure 14. *Summer Brain Gain* Program Logic Model: Elementary School Modules

Situation	Inputs/Resources	Outputs		Outcomes/Impact
WHAT WE ADDRESS	**WHAT WE PROVIDE**	**WHAT WE DO**	**WHO WE REACH**	**WHAT WE ACHIEVE**
An average loss in reading skills of over 2 months for low-income students during the summer (The Campaign for Grade Level Reading, 2015) For all youth, greatest summer learning loss occurs in math (National Summer Learning Association) Unequal access to summer learning programs (Edelman, 2012) Exacerbation of the achievement gap between low-income youth and their peers because of summer learning loss (Meece & Eccles, 2010) Accumulated effects of summer learning loss can follow youth through high school and beyond (Leefat, 2015)	**BGCA** Expertise of BGCA professional staff The research-informed *SBG* elementary-level curriculum modules based on project-based learning principles Lessons learned from a rigorous evaluation of implementation and impact of elementary SBG Partnerships with local Boys & Girls Clubs worldwide Guidelines and expectations for elementary *Summer Brain Gain* program fidelity **Local Clubs** Experienced youth development professionals Club facilities/space and overhead costs	**BGCA** Multi-level program curriculum training for Club leadership and program facilitators Ongoing peer learning opportunities for Club staff Program implementation tools Self-evaluation tools and technical assistance **Local Clubs** Adherence to program fidelity guidelines, including: • Implement all six curriculum modules Club-wide • Rising grades K-3: Provide 2 hours or less of daily instruction • Rising grades 4-5: Provide 3.5 hours or more of daily instruction	Youth members in rising grades K-5 • Elementary school curriculum modules • Parent and community engagement Boys & Girls Clubs administrative staff • CPO Webinar • Planning Kit • *Summer Brain Gain* Session Youth development instructional staff • Planning Kit • Learning Coach Module • *Summer Brain Gain* Session • Weekly Chats	**Short-Term:** Expanded participation of low-income youth in quality, hands-on summer programming No noted significant summer learning loss in early literacy, reading, and math among participating youth **Intermediate:** Diminished achievement gap between participants and their more affluent peers by the end of fifth grade Contribution to the evidence base as a qualified effective summer learning intervention **Long-Term:** Lasting positive consequences for participating youth such as high school completion and college entrance

The new logic model is specific to the implementation and outcomes of the SBG elementary school modules and reflects the following changes to the fidelity guidelines and outcomes:

- Differentiates length of daily instruction for youth in rising grades K-3 and rising grades 4 and 5
- Expands module implementation to all six (rather than five of the six) ,
- Omits short-term outcomes for increased interest in reading and 2st Century skill development
- Refines intermediate outcomes to examine the extent to which the program diminishes the achievement gap that exists for many Club youth in comparison to their more affluent peers and contributes to the overall knowledge base of quality and effective summer learning interventions
- Strengthens the long-term outcome to assess the extent to which the program has lasting consequences in overall school success for participants, such as high school completion and post-secondary/college entry

v. Exploratory Outcome Comparisons (Treatment vs. Control) Based on Program Fidelity

To understand better the impact of program fidelity in the overall performance of Clubs on the STAR assessments, two sets of ANCOVA comparisons were drawn between treatment participants who attended Clubs that implemented with fidelity and control group youth. The first was based on treatment Clubs that implemented SBG with the original fidelity metric (Table 27), and the second was based on treatment Clubs that implemented the program in accordance with the new age-specific fidelity metrics described above (Table 28).

Table 27. *STAR Assessment Results with Original Program Fidelity*
Analysis of Covariance (ANCOVA) Results

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Treatment – original fidelity	62	753.7	779.8	777.9	+13.9	0.260
Control	141	745.4	763.2	764.0		
Reading						
Treatment – original fidelity	50	390.4	384.2	384.3	+13.5	0.607
Control	176	390.6	370.8	370.8		
Math						
Treatment – original fidelity	48	593.4	606.3	598.2	+62.9	0.001 *
Control	131	574.6	532.3	535.3		

Denotes statistical significance

Table 28. *STAR Assessment Results with New Program Fidelity*

Analysis of Covariance (ANCOVA) Results

	Matched N	Pretest Mean	Posttest Mean	Estimated Marginal Mean (Posttest)	Marginal Mean Difference	p-value
Early Literacy						
Treatment – new fidelity	33	725.6	825.9	830.2	+68.1	0.000 *
Control	141	745.4	763.2	762.1		
Reading						
Treatment – new fidelity	36	382.1	451.1	455.0	+84.9	0.008 *
Control	176	390.6	370.8	370.0		
Math						
Treatment – new fidelity	37	57.5	623.3	617.9	+84.0	0.000 *
Control	131	574.6	532.3	533.9		

Denotes statistical significance

When comparing the STAR outcomes for treatment youth who received SBG with fidelity as originally specified to control group youth (Table 25), treatment youth showed significantly higher results in math. However, there were no significant differences between treatment and control youth in early literacy and reading. This is not surprising, as it mirrors the findings from the HLM analysis conducted with the full sample of treatment youth.

At the same time, youth who attended treatment Clubs that delivered the program with fidelity to the new metric significantly outperformed their control group peers in all three subjects – early literacy, reading, and math (Table 27). This is particularly notable given that the analyses on the full sample and the originally specified fidelity metric only resulted in significant findings for math.

4. Conclusions and Recommendations

A. Key Findings

SBG participation appears to stem summer learning loss and lead to gains in academic skills. The present study yielded evidence of the program's effectiveness, including:

- SBG participants demonstrated sizeable, but not statistically significant, gains in math skills in comparison to non-participating youth. HLM analyses that included the pre-test score, participant race, gender, eligibility for free/reduced price meals, and days attended as covariates showed no statistically significant impacts for any of the STAR assessments. For math, however, the observed effect size suggests that impact is substantively important. This finding is consistent with the meta-analysis conducted by Cooper (2000) and other national research that summer programs lead to outcomes that are more favorable on math assessments than on reading assessments.

- Younger Brain Gain participants (rising in grades 1-3) achieved statistically significant gains in their average early literacy skills, while older participants (those in rising grades 4 and 5) experienced no significant learning loss in math and reading. Over the course of the program, these participants maintained their average performance in both subjects. Nationally, research studies regarding whether summer learning programs are more effective for one age group show mixed findings. For example, Cooper et al. (2000) found that summer programs had more positive effects for the early elementary grades than for the upper elementary grades. However, in other studies that examined the effectiveness of the same summer program for multiple grade levels, findings differed.

Implementation and experience may be responsible for different outcomes. The evaluation findings showed that certain conditions were sometimes associated with better outcomes, specifically:

- *Program Dosage:* An analysis of STAR assessment data for treatment youth partitioned by program attendance showed that younger participants (grades 1-3) with lower attendance significantly outperformed their higher attending peers in early literacy. For the older youth (grades 4 and 5), no significant differences were evident for reading or math. These findings are inconsistent with the literature on the relationship between summer program attendance and outcomes. One rigorous, randomized control trial study, for example, provides compelling evidence of the influence of program attendance rates, as well as multiple years of program of participation, on outcomes (Borman, 2006).

- *Club-Level SBG Experience:* A similar analysis examined STAR assessment results among the treatment youth partitioned by prior Club experience with SBG implementation. Younger program youth (rising grades 1-3) who attended Clubs with previous SBG experience showed significant outcomes for early literacy. For older youth (rising grades 4 and 5) from SBG experienced Clubs, the findings were mixed, with significant gains in math but not for reading.

- *Program Fidelity:* A comparison of STAR assessment data by Club adherence to program fidelity guidelines (e.g., Club-wide implementation, at least 3 hours of SBG instruction daily, and implementation of at least five of the six program modules) showed inconclusive findings. While Club adherence to all of the SBG program fidelity guidelines did not yield better youth outcomes, implementation of individual guidelines was associated with performance in certain subjects. The analyses showed a number of notable findings:

  - *Club-wide Implementation* – For younger participants (rising grades 1-3), a significant positive difference was evident in early literacy development for Clubs that implemented SBG Club-wide.

  - *Number of Modules* – For all three subject areas (early literacy, reading, and math), youth who received instruction in all six program modules significantly outperformed those who received just five program modules.
  - *Daily Instructional Time* – While there were no significant effects for any grade group or subject, a close examination of the these data did suggest that less instructional time might be associated with better outcomes in early literacy and that more time might be associated with better outcomes in reading and math.

  An exploratory analysis of a revised metric for program fidelity (Club-wide implementation, implementation of *all six* modules, and daily instructional time *based on grade-group*[8]) showed positive results. Participants from Clubs that met this new exploratory fidelity metric significantly outperformed their peers who attended Clubs that did not in all three subject areas – early literacy (rising grades 1-3) and reading and math (rising grades 4 and 5).

- An additional comparative analysis examined outcomes between the control group and treatment youth from Clubs that implemented in accordance with the new fidelity metric. The results showed that treatment youth significantly outperformed the control group youth in all three subjects. This is particularly notable given that the same analysis conducted using the original program fidelity measure only resulted in significant findings for math.

Clubs successfully implemented elementary SBG, despite some challenges. The 2015 study showed that:

- Across all Clubs, the great majority of program instructors incorporated the four essential project-based learning practices – engage, express, evaluate, and exhibit – to facilitate the program modules with youth.
- Club interest in future SBG implementation has increased steadily over time – from 64% in 2013 to 70% in 2014 to 76% in 2015. The same is true for youth satisfaction with SBG program: 56% in 2013 to 80% in 2014 to 85% in 2015.
- Both program instructors and Club leadership benefitted from the various SBG training opportunities and technical assistance resources launched during summer 2015, with the CPO Webinar, Planning Kit, program hotline, and Weekly Module Webinars showing the greatest use.
- According to program instructors, the program modules that worked most successfully offered youth engaging and creative content/themes, and featured opportunities for the

[8] 2 hours or less for rising grades 1-3 and 3.5 hours or more for rising grades 4 and 5

youth to work in group activities and projects, particularly those with well-liked stories and books and hands-on learning (much like Module 6). This finding was also evident in 2014, with program instructors noting that some of the most successful elements of the SBG program were those that included hands-on and interactive activities and group work.

- A good number of instructors worked hard to customize the delivery of the modules to program youth of varying ages. The 2015 evaluation showed a marked decline in the proportion of program instructors who believed the elementary program modules were age-appropriate (82% in 2014 vs. 67% in 2015).
- Program instructors continue to struggle with the amount of preparation time required, though this was somewhat less true for Clubs with prior SBG experience. (In 2013, program staff reported that the modules required too much preparation time and in 2014, one of the greatest challenges to implementation was coping with the amount of weekly program prep time.)
- While a greater percentage of 2015 Clubs were unchallenged by the costs of program materials in comparison to 2014, accessibility of program books and materials continued to be an issue (as in 2014).
- In 2015, Clubs experienced fewer challenges with the weekly module schedule, which has decreased substantially since 2013. However, challenges persist with the amount daily instructional time, which resulted in wide variations of the number of activities completed weekly across the Clubs. In 2014, Clubs cited implementation challenges related to insufficient time for program delivery, large class sizes, and lengthy program activities.
- The proportion of Club staff that observed growth in the teamwork and collaboration skills of participating youth has increased substantially from one summer to the next – from 26% in 2013 to 32% in 2014 to over half in 2015 (52%). This percentage was even higher for 2015 Clubs with prior SBG experience (58%).
- Clubs with prior SBG experience were better implementers of the program. They were much more likely to implement with fidelity and complete all six program modules, and almost twice as likely to offer three or more program instructional hours, than were the new SBG Clubs.

B. Conclusions and Recommended Next Steps

The 2015 Summer Brain Gain evaluation stemmed from two years of programmatic data collection that helped BGCA refine the model to its current state. Themes emerged from the current evaluation regarding curriculum implementation, program impact, and prior

experience with the program, all of which we believe will be useful to the BGCA to enhance further the elementary SBG model for next summer. To this end, below we highlight the major impressions from this year's evaluation along with a set of recommended next steps for the BGCA to consider:

- The elementary SBG curriculum appears to have had the greatest impact on the math skills of participating youth. *Recommendation – Investigate why the math impact seems more pronounced than reading, particularly since some Clubs suggested the curriculum did not place sufficient emphasis on math skills. For example, to what extent are Clubs supplementing the SBG curriculum with additional math-focused activities? How much are the program's hands-on and project-based activities contributing to these gains in math skills?*

- Prior Club experience with SBG implementation seems associated with many key aspects of successful program implementation including greater program fidelity, completion of all program modules, and higher youth engagement – ***and*** with higher growth in early literacy and math. *Recommendation – Design future evaluations of elementary SBG to study more closely the relationship between prior SBG experience and implementation and outcomes of Clubs and what implications this might have for training and support for new Clubs. In addition, BGCA might consider a study that evaluates the effects of youth participation in SBG over multiple, consecutive summers on academic and other outcomes.*

- The overall appeal and success (e.g., outcomes) of the elementary SBG curriculum seems related to both participant rising grade level and module theme, with varying degrees of age-appropriateness and completion of activities within module. Overall, less program time looks to be more effective for the development of early literacy skills among younger participants, while the opposite appears to be true for the older participants who seem to need additional instructional time to show growth in reading and math. *Recommendations – Create customized, separate curricula for youth in early and upper elementary grade groups, taking into account the learnings about which modules seemed to be more (Module 6) and somewhat less (Modules 3 and 4) effective; and establish differentiated fidelity standards/criteria, including standards for completion at the module level. Another suggestion is to provide Clubs with a recommended class size so that program instructors have greater opportunities to differentiate instruction based on the needs of youth. In addition, a qualitative study of elementary SBG might help BGCA understand the differences in outcomes for youth based on their age group and instructional time.*

- Compared to Clubs with prior SBG experience, new implementation Clubs appear less clear on program fidelity and overall expectations for program implementation and not as comfortable with evaluation activities. *Recommendations – Consider identifying a set of more experienced Clubs to provide mentoring and support for new implementation Clubs; and/or engaging program staff from experienced Clubs in identifying a set of lessons learned to help inform training and support for newcomers.*

- Taken together, the evaluation findings suggested revisions to both the program fidelity requirements and to the elementary SBG program logic model as a whole.
  Recommendations – Conduct a replication study that examines outcomes based on the revised set of program fidelity requirements as specified in the updated program logic model. In addition to program fidelity, future evaluations of elementary SBG might explore the extent to which the presence of characteristics cited in the literature as effective for summer learning programs show better outcomes for participating youth. Given the 2015 SBG evaluation findings, BGCA should consider examining a number of these program characteristics: presence of highly qualified/teacher-certified program instructors, strong and supportive Club leadership, early summer program planning, class size, and types of strategies used to maximize youth attendance (Bell, 2007; Rand Education, 2011).

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Attachment 1 – *Summer Brain Gain* Logic Model

Situation

WHAT WE ADDRESS

Disproportionate summer learning loss that afflicts low-income students, particularly in reading

Summer learning loss in mathematics that affects all students

Unaffordable or inaccessible summer academic programs

Persistent achievement gaps that exist between students with lower- and higher-economic backgrounds

Inputs/Resources

WHAT WE PROVIDE

BGCA

Expertise of BGCA professional staff

The research-informed *Summer Brain Gain* program curriculum based on project-based learning principles

Lessons learned from two consecutive annual evaluations of *Summer Brain Gain*

Partnerships with local Boys & Girls Clubs worldwide

Guidelines and expectations for *Summer Brain Gain* program fidelity

Local Clubs

Experienced youth development professionals

Club facilities/space and overhead costs

Outputs

WHAT WE DO

BGCA

Multi-level program curriculum training for Club leadership and program facilitators

Ongoing peer learning opportunities for Club staff (e.g., weekly chats, learning coaches, program hotline)

Program implementation tools (e.g., PR Tool Kit, Funding Template) and technical assistance

Self-evaluation tools and technical assistance

Local Clubs

Club-wide program implementation

Adherence to program fidelity guidelines and expectations (e.g., staff-member ratio, training, preparation time)

WHO WE REACH

Youth members rising grades K-8

- Elementary school curriculum
- Middle school curriculum
- Parent/community engagement (e.g., weekly culminating events)

Local Boys & Girls Clubs administrative staff

- CPO Webinar
- Planning Kit
- *Summer Brain Gain* Session

Youth development instructional staff

- Planning Kit
- Learning Coach Module
- *Summer Brain Gain* Session
- Weekly Chats

Outcomes/Impact

WHAT WE ACHIEVE FOR PROGRAM YOUTH

Short-Term (Post-Program)

Skill development in creating thinking, problem-solving, and decision-making (middle school grades only)

Improved peer collaboration and teamwork skills (upper elementary and middle school grades)

No noted significant summer learning loss in early literacy, reading, and math

Intermediate

Significant reductions in the achievement gap

Long-Term

Greater likelihood of overall academic success

Attachment 2 – Data Collection Instruments

Summer Brain Gain Implementation Survey – Control Clubs

1. Name of Club: *(drop down menu – organized by state and alphabetical order)*

2. Title/Position of Respondent: _____
   - ❍ Executive Director
   - ❍ Management Staff (Organizational Level)
   - ❍ Site, Unit, or Club Director
   - ❍ Program or Education Director (Club Level)
   - ❍ Youth Development Professional
   - ❍ Administrative Staff
   - ❍ Other (*please specify*): _____

3. Did this Club implement any published or validated summer reading or math curricula with elementary-age youth as part of the overall summer program?
   - ❍ Yes
   - ❍ No (SKIP TO Q.6)

4. Which of the following summer reading or math programs did your Club run for elementary-age youth this summer? (Check **ALL** that apply)
   - ❍ Summer Brain Gain *Read!*
   - ❍ Summer Brain Gain
   - ❍ Other (*please specify*): _____
   - ❍ Other (*please specify*): _____

5. Taken together, on average, how many instructional hours per day did this Club dedicate to these summer reading or math programs for elementary-age youth?

❍ Less Than 1 Hour	❍ 1 Hour	❍ 1.5 Hours	❍ 2 Hours
❍ 2.5 Hours	❍ 3 Hours	❍ 3.5 Hours	❍ 4 Hours
❍ 4.5 Hours	❍ 5 Or More Hours		

6. Did this Club implement a locally developed summer learning program or activities with elementary-age youth as part of the overall summer program?
   - ❍ Yes
   - ❍ No (SKIP TO Q.8)

7. Taken together, on average, how many instructional hours per day did this Club dedicate to the locally developed summer learning programs or activities for elementary-age youth?

❍ Less Than 1 Hour	❍ 1 Hour	❍ 1.5 Hours	❍ 2 Hours
❍ 2.5 Hours	❍ 3 Hours	❍ 3.5 Hours	❍ 4 Hours
❍ 4.5 Hours	❍ 5 Or More Hours		

8. Overall, to what extent did BGCA and/or Metis provide clear expectations for the control Clubs involved in the 2015 Summer Brain Gain program evaluation?
   - ❍ A great deal
   - ❍ Somewhat/a little
   - ❍ Not at all

9. What is your opinion of the quality and frequency of communication between BGCA and/or Metis and your Club throughout the evaluation?
    - ❍ Excellent
    - ❍ Very good
    - ❍ Good
    - ❍ Fair
    - ❍ Poor

10. What information, training, or support did your Club need that BGCA or Metis did not provide, if any?

11. Thinking about all of the elementary summer programming offered, to what extent did your Club observe positive changes in participating youth in the following areas?

	Very Much	Moderately	A Little	Not at All
Interest in reading				
Vocabulary development				
Writing skill				
Collaboration and teamwork				
Creativity/innovation				
Communication				
Critical thinking/problem-solving				
Presentation skills				
Self and peer evaluation				

12. To what extent did this Club's elementary-age summer programming provide youth with a fun and engaging summer experience?
    - ❍ Very much
    - ❍ Moderately
    - ❍ A little
    - ❍ Not at all

13. Please provide any additional comments that you think might help strengthen the evaluation of the Summer Brain Gain program moving forward, particularly for Clubs serving as control sites.

Summer Brain Gain Implementation Survey – Treatment Clubs

1. Name of Club: *(drop down menu – organized by state and alphabetical order)*

2. Title/Position of Respondent: _____
   - ❍ Executive Director
   - ❍ Management Staff (Org Level)
   - ❍ Site, Unit, or Club Director
   - ❍ Program or Education Director (Club Level)
   - ❍ Youth Development Professional
   - ❍ Administrative Staff
   - ❍ Other (please specify): _____

3. Did your Club implement Summer Brain Gain (SBG) in past summers?

Summer 2013:	❍ Yes	**Summer 2014:**	❍ Yes
	❍ No		❍ No

Summer 2015 Implementation

4. Did you implement the **ELEMENTARY** Summer Brain Gain program Club-wide?
   - ❍ Yes
   - ❍ No

5. Did your Club allow youth to drop-in to the **ELEMENTARY** SBG program throughout the summer?
   - ❍ Yes
   - ❍ No

6. For how many weeks did your Club run the **ELEMENTARY** Summer Brain Gain program?
   - ❍ 1 week
   - ❍ 2 weeks
   - ❍ 3 weeks
   - ❍ 4 weeks
   - ❍ 5 weeks
   - ❍ 6 weeks
   - ❍ More than 6 weeks

7. The **ELEMENTARY** Summer Brain Gain program includes six modules. Which elementary modules did your Club complete this summer? (Check **ALL** that apply)
   - ❍ Module 1: The Power of Collaboration
   - ❍ Module 2: Hooray for Heroes
   - ❍ Module 3: One Bright Idea after Another
   - ❍ Module 4: Making Global Connections
   - ❍ Module 5: Fit4Life
   - ❍ Module 6: Race to the Future

8. How many Club staff and youth (unduplicated) participated in **ELEMENTARY** Summer Brain Gain?

ENTER WHOLE NUMBER FROM O TO 999.	**Number**
Elementary Program Instructors:	
Youth Participants:	

9. On average, how many instructional hours per day did your Club dedicate to facilitating the **ELEMENTARY** Summer Brain Gain modules?
   - ❍ Less than 1 hour
   - ❍ 1 hour
   - ❍ 1.5 hours
   - ❍ 2 hours
   - ❍ 2.5 hours
   - ❍ 3 hours
   - ❍ 3.5 hours
   - ❍ 4 hours
   - ❍ 4.5 hours
   - ❍ 5 or more hours

10. On average, how much time did **ELEMENTARY** program facilitators spend preparing for daily activities (e.g., reading the books, reviewing the module activities, and prepping the learning space)?
_____ Minutes

Program Orientation, Training, and Support

11. Did someone from your Club attend the Summer Brain Gain **CPO Webinar**?
❍ Yes
❍ No (SKIP to Q.13)

12. To what extent did the CPO Webinar help Club leadership understand the Summer Brain Gain program?
❍ Very much ❍ Moderately
❍ A little ❍ Not at all

13. Did your Club identify a Summer Brain Gain program Learning Coach?
❍ Yes
❍ No (SKIP to Q.16)

14. Did the program Learning Coach participate in the Summer Brain Gain **Learning Coach Module**?
❍ Yes
❍ No (SKIP to Q.16)

15. To what extent did the Learning Coach Module help your Club Learning Coach develop an action plan for Summer Brain Gain implementation?
❍ Very much ❍ Moderately
❍ A little
❍ Not at all

16. Did Club leadership or anyone else at your Club use the Summer Brain Gain program **Planning Kit**?
❍ Yes
❍ No (SKIP to Q.18)

17. To what extent was the Planning Kit effective in helping your Club:

	Very much	Moderately	A little	Not at all
Understand the principles of project-based learning				
Implement SBG with fidelity				
Develop an implementation plan for SBG				

18. Did someone from your Club (leadership or program facilitator) attend the in-service **SBG Session**?
❍ Yes, conducted by BGCA at the All Staff Training
❍ Yes, conducted by a Learning Coach
❍ No (SKIP to Q.20)

19. To what extent did the Summer Brain Gain Session help Club staff understand:

	Very much	Moderately	A little	Not at all
The program modules				
The principles of project-based learning				
How to implement SBG with fidelity				

20. Overall, to what extent did BGCA provide clear expectations for implementation of **ELEMENTARY** SBG?
❍ A great deal
❍ Somewhat/a little
❍ Not at all

21. What is your opinion of the quality and frequency of communication between BGCA and your Club throughout program introduction, training, and implementation?
    - ❍ Excellent
    - ❍ Very good
    - ❍ Good
    - ❍ Fair
    - ❍ Poor

22. What information, training, and/or support did your Club need that BGCA did not provide, if any?

Youth Engagement/Satisfaction

23. How much did the **ELEMENTARY** school modules appeal to youth with respect to:

	Very much	Moderately	A little	Not at all
Content of the story or book				
Daily activities				
Products of the Week				
Community Sharing Event				
Overall fun				

24. How would you rate youth engagement in the **ELEMENTARY** module activities?
    - ❍ Excellent
    - ❍ Above Average
    - ❍ Average
    - ❍ Below Average
    - ❍ Very Poor

25. Overall, would you rate the quality of **ELEMENTARY** modules?
    - ❍ Excellent
    - ❍ Above Average
    - ❍ Average
    - ❍ Below Average
    - ❍ Very Poor

Implementation Challenges and Successes

26. How easy or challenging were each of these aspects of implementation for your Club?

	Very Easy	Fairly Easy	Somewhat Challenging	Very Challenging
The amount of prep time required each day				
The costs of program materials				
Ability to access program materials (e.g., books)				
The amount of daily instructional time				
The program facilitation strategies				
The amount of evaluation activities required				
The use of the project-based learning principles				
Adherence to the weekly module schedule				

28. Thinking about **LEMENTARY** Summer Brain Gain, to what extent did your Club observe positive changes in participating youth in the following areas?

	Very Much	Moderately	A Little	Not at All
Interest in reading				
Vocabulary development				
Writing skill				
Collaboration and teamwork				
Creativity/innovation				
Communication				
Critical thinking/problem-solving				
Presentation skills				
Self and peer evaluation				

29. Thinking about elementary Summer Brain Gain as a whole, to what extent did the program provide youth with a fun and engaging summer experience?
    - ❍ Very much
    - ❍ Moderately
    - ❍ A little
    - ❍ Not at all

30. Would your Club choose to implement Summer Brain Gain again next summer?
    - ❍ Yes
    - ❍ No

31. Please provide any additional comments that you think might help strengthen the Summer Brain Gain program.

Summer Brain Gain Member Survey, Rising Grades 3-5

Date: _____

Member ID: _____ Member Birthday: _____
(Month/Day/Year)

READ EACH STATEMENT QUIETLY TO YOURSELF AND MARK THE ONE BEST ANSWER FOR YOU.

1. Thinking about last week, on how many days did you read for fun?
❍ None ❍ 1-2 days ❍ 3-4 days ❍ 5-6 days ❍ 7 days

2. I am excited when I think about reading a new book.
❍ A lot like me ❍ A little like me ❍ Not like me

3. I like to learn new words.
❍ A lot like me ❍ A little like me ❍ Not like me

4. I make time to read.
❍ A lot like me ❍ A little like me ❍ Not like me

5. I am comfortable speaking in front of a group.
❍ A lot like me ❍ A little like me ❍ Not like me

6. I make projects that are creative and unique.
❍ A lot like me ❍ A little like me ❍ Not like me

7. I know how to reflect on (think about) the quality of my work.
❍ A lot like me ❍ A little like me ❍ Not like me

8. I know how to give helpful suggestions to others about improving their work.
❍ A lot like me ❍ A little like me ❍ Not like me

9. WHEN I AM WORKING ON SOMETHING WITH A GROUP… (please choose **one answer** for each statement)

	Very true	Sort of true	Not very true	Not at all true
a. I listen to what other people say.	❍	❍	❍	❍
b. I am willing to do whatever the group needs me to do.	❍	❍	❍	❍
c. I have trouble going along with other people's ideas.	❍	❍	❍	❍
d. I get frustrated if I can't do things my way.	❍	❍	❍	❍

10. WHEN SOMETHING IMPORTANT GOES WRONG IN MY LIFE… (please choose **one answer** for each statement)

		Very true	Sort of true	Not very true	Not at all true
a.	I try to figure out how to do better next time.	❍	❍	❍	❍
b.	I talk about it with someone to understand what happened.	❍	❍	❍	❍
c.	I tell myself I'll do better next time.	❍	❍	❍	❍
d.	I just can't stop worrying about it.	❍	❍	❍	❍
e.	I try to keep people from finding out.	❍	❍	❍	❍

11. HOW TRUE IS EACH OF THE FOLLOWING STATEMENTS FOR YOU? (please choose **one answer** for each statement)

		Very true	Sort of true	Not very true	Not at all true
a.	If something is really hard, I keep working at it.	❍	❍	❍	❍
b.	When I run into a difficult problem, I try even harder.	❍	❍	❍	❍
c.	If I don't understand something right away, I stop trying to understand.	❍	❍	❍	❍
d.	When I have trouble doing something, I give up.	❍	❍	❍	❍
e.	If something is really hard, I take a break and come back to it later.	❍	❍	❍	❍

(POST QUESTIONS FOR TREATMENT CLUBS ONLY)

12. I enjoyed the group or team activities we did during the Summer Brain Gain program
❍ A lot ❍ A little ❍ Not at all

13. Overall, I enjoyed the Summer Brain Gain program
❍ A lot ❍ A little ❍ Not at all

14. I got to choose the activities I did in the Summer Brain Gain program
❍ A lot ❍ A little ❍ Not at all

15. I was interested in the Summer Brain Gain activities
❍ A lot ❍ A little ❍ Not at all

16. I learned a lot from the Summer Brain Gain program
❍ Agree ❍ Disagree ❍ I am not sure

17. I would go to Summer Brain Gain next summer
❍ Agree ❍ Disagree ❍ I am not sure

18. I would tell my friends to go to Summer Brain Gain next summer
❍ Agree ❍ Disagree ❍ I am not sure

You are finished! Thank you for completing this survey.

Summer Brain Gain Weekly Instructor Log (Treatment Only)

Background Information

1. Staff ID: _____

2. Date: _____

3. Module Name:
   - Module 1: The Power of Collaboration
   - Module 2: Hooray for Heroes
   - Module 3: One Bright Idea After Another
   - Module 4: Making Global Connections
   - Module 5: Fit for Life
   - Module 6: Race to the Future

4. Check ALL of the module activities completed: *(DROP DOWN MENU)*

5. Average Number of Participants this Week: _____

6. Grade Levels of Participating Youth: (Check ALL that apply)
   - Rising Grades K-3
   - Rising Grades 4-5
   - Other

7. Club space used in the facilitation of this module: (Check ALL that apply)
   - Gymnasium
   - Tech Center
   - Outdoors
   - Classroom
   - Other

8. Was there a junior staff person or co-leader present this week?
   - Yes
   - No

Preparation

9. On average, approximately how much time did you spend planning daily activities for this week's module (outside of regular program time)? **_____ minutes/hours**

10. Did you have sufficient time during your regular workday to read all of the needed books, review the module activities, and prep the space?
    - Almost Always
    - Some Of The Time
    - Not At All

11. Did you have all of the required materials to implement this module?
    - Yes
    - No

12. Did you view the webinar for this module?
    - Yes
    - No

Facilitation

13. Check each of the practices you used to facilitate this module, and indicate how well the practices worked in achieving the module learning objectives.

	Used Practice		How Well the Practice Worked		
	No	Yes	Extremely	Moderately	Not well at all
Asking open-ended questions	❍	❍	❍	❍	❍
Connecting activities to participants' experiences	❍	❍	❍	❍	❍
Connecting activities to your personal experiences	❍	❍	❍	❍	❍
Encouraging youth voice and choice	❍	❍	❍	❍	❍
Brainstorming	❍	❍	❍	❍	❍
Facilitating/encouraging group discussions	❍	❍	❍	❍	❍
Youth working in small/cooperative learning groups	❍	❍	❍	❍	❍
Engaging youth in peer feedback	❍	❍	❍	❍	❍
Displaying work or products	❍	❍	❍	❍	❍
Engaging youth in group presentations, performances, posters, or other products	❍	❍	❍	❍	❍

Effectiveness

14. How much did this module **APPEAL TO YOUTH** with respect to:

	Very much	Moderately	A little	Not at all	Not Applicable
Content of the story or book					
Daily activities					
Products of the Week					
Community Sharing Event					
Overall fun					

15. How much did this module **HELP YOUTH** with respect to:

	Very Much	Moderately	A Little	Not at All	Not Applicable
Interest in reading					
Vocabulary development					
Writing skills					
Collaboration and teamwork					
Creativity/innovation					
Communication					
Critical thinking/problem-solving					
Presentation skills					
Self and peer evaluation					

16. How **age-appropriate** was this module?
    - Too Advanced
    - Too Simplistic
    - About Right

17. What is your opinion of the **overall quality** of this module?
    - Excellent
    - Above Average
    - Average
    - Below Average
    - Very Poor

Challenges and Successes

18. What was most challenging with the implementation of this module? What did you to do address these challenges, if anything?

19. What aspects of this module worked particularly well?

Additional Questions for the Final Instructor Log Submission

20. Please indicate the resources you used to implement Summer Brain Gain this summer and the helpfulness of each.

	Used		**If *yes* → Helpfulness**		
	No	Yes	Very	Moderately	Not at all helpful
Hotline	❍	❍	❍	❍	❍
Email (**braingain@bgca.org**) support	❍	❍	❍	❍	❍
Registration Webinar	❍	❍	❍	❍	❍
Planning Kit	❍	❍	❍	❍	❍
All Staff Conferences	❍	❍	❍	❍	❍
Learning Coach Module	❍	❍	❍	❍	❍
Module Weekly Webinars	❍	❍	❍	❍	❍

21. Did you request any additional support from the Summer Brain Gain Program Team/BGCA to help facilitate this module?
    - Yes
    - No

21a. IF YES → How satisfied were you with the support you received?
    - Very Satisfied
    - Moderately Satisfied
    - Not At All Satisfied

2015 Summer Brain Gain Evaluation Program Roster and Attendance Form

Directions: *Please use this form to provide a list of all Summer Brain Gain (SBG) participants in rising Grades K-5. For each member, record their MemberID, demographic information, and total number of program days attended. You may add rows to accomodate additional participants as needed.*

Name of Club *(drop down)*

Total Possible Number of SBG Program Days:

MemberID	Member First Name	Member Last Name	Assigned to STAR Assessments *(drop down)*	Rising Grade Level *(drop down)*	Race/Ethnicity *(drop down)*	Poverty Status *(drop down)*	Gender *(drop down)*	Number of Program Days Attended

2015 Summer Brain Gain Evaluation Program Expense Form

Name of Club (drop down menu)		
Number of Youth in Rising Grades K-5 in 2015 Summer Brain Gain Program:		Youth (Rising Grades K-5)
Number of Summer Brain Gain Classes or Groups for Rising Grades K-5:		Classes (Rising Grades K-5)

2015 Summer Brain Gain Details of Operating Expenses

1. PERSONNEL EXPENSE CATEGORIES

A. Salaries - Full Time		% of Position Dedicated to SBG	Base Salary	2015 SBG Value
1			$ -	$0.00
2			$ -	$0.00
B. Salaries - Part Time		**Total # of Hours Dedicated to SBG**	**Hourly Rate**	**2015 SBG Value**
1			$ -	$0.00
2			$ -	$0.00

2. PROGRAM-REQUIRED TECHNOLOGY EXPENSES (EQUIPMENT, TECHNICAL SUPPORT, INTERNET ACCESS, AND COMMUNICATION COSTS)

1			$ -
2			$ -
3			$ -

3. REQUIRED PROGRAM MATERIAL EXPENSES (BOOKS, ART SUPPLIES, PRIZES, CLASSROOM SUPPLIES, SCIENCE EQUIPMENT, JOURNALS, PAPER GOODS)

1			$ -
2			$ -
3			$ -

4. PRINTING AND COPYING EXPENSES

1			$ -
2			$ -
3			$ -

5. OTHER PROGRAM EXPENSES

1			$ -
2			$ -
3			$ -
4			$ -

Attachment 3: Hierarchical Linear Modeling Details

Hierarchical Linear Modeling (HLM) assessed the overall program impact on student early literacy, reading, and math achievement. Because Club was the unit of assignment but the study measured impact at the individual level, this cross-sectional analysis used two-level models to account for the clustering of participants within Clubs.

A number of covariates were included in the HLM models. At the participant level, the full models included baseline test score, participant gender, race/ethnicity, eligibility for free or reduced-price meals, and days attended. At the Club level, only the treatment indicator was included in both full and final models. All covariates, with the exception of treatment at level 2, were grand mean centered.

Treatment of Missing Data

Note that for all the program impact analyses, the final analytic samples included those with outcome data available and non-missing pre-test scores. In other words, case deletion was used to remove subjects with missing outcome and/or pre-test data from respective analytic samples. For missing values on any other covariates, the analysis used the dummy variable approach shown in Puma et al. (2009) for all contrasts. Three related steps were followed to apply this approach to handling missing data of a given independent variable X:

Step 1: A new variable Z was created, which was set equal to X for all cases where X is non-missing and set to a constant value (the grand mean of X for this evaluation) for those cases where X is missing;

Step 2: A new dichotomous variable D was also created as a "missing data flag." This variable was set equal to one for those cases where X was missing, and set equal to zero for those cases where X was not missing; and

Step 3: In the impact analysis model, the original independent variable X was replaced with both Z and D.

Based on this new specification, the impact models estimated the relationship between the outcome and X when X was not missing, and estimated the relationship between the outcome and D when X is missing. The model specifications and detailed regression results are as follows:

Full Hierarchical Linear Regression Model

Level 1: Participant level

$$
\begin{aligned}
Y_{ij} = {} & \beta_{0j} + \beta_{1j}(\text{STAR\_Pre-Test}_{ij} - \overline{\text{STAR\_Pre-Test}..}) + \beta_{2j}(\text{Female}_{ij} - \overline{\text{Female}..}) \\
& + \beta_{3j}(\text{Gender\_MS}_{ij} - \overline{\text{Gender\_MS}..}) + \beta_{4j}(\text{Hispanic}_{ij} - \overline{\text{Hispanic}..}) + \beta_{5j}(\text{Black}_{ij} - \overline{\text{Black}..}) \\
& + \beta_{6j}(\text{Race\_MS}_{ij} - \overline{\text{Race\_MS}..}) + \beta_{7j}(\text{FRL}_{ij} - \overline{\text{FRL}..}) \\
& + \beta_{8j}(\text{FRL\_MS}_{ij} - \overline{\text{FRL\_MS}..}) + \beta_{9j}(\text{Attendance}_{ij} - \overline{\text{Attendance}..}) \\
& + \beta_{10j}(\text{Attendance\_MS}_{ij} - \overline{\text{Attendance\_MS}..}) + r_{ij}
\end{aligned}
$$

where

Y_{ij} represents the selected outcome for participant *i* in Club *j*;

β_{0j} represents the mean score for Club *j* adjusted for the participant-level covariates;

$\beta_{1j} - \beta_{10j}$ represent the regression coefficients for Club *j*, associated with various participant-level covariates; and

r_{ij} represents the random error associated with participant *i* in Club *j*.

Level 2: Club level

$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{TRT}_j) + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

$\beta_{4j} = \gamma_{40}$

$\beta_{5j} = \gamma_{50}$

$\beta_{6j} = \gamma_{60}$

$\beta_{7j} = \gamma_{70}$

$\beta_{8j} = \gamma_{80}$

$\beta_{9j} = \gamma_{90}$

$\beta_{10j} = \gamma_{100}$

where

γ_{00} represents the selected outcome mean for the comparison Clubs;

γ_{01} represents the regression coefficient associated with the treatment indicator – it quantifies the treatment impact (the mean difference in the outcome between treatment and comparison subjects);

$\gamma_{10} - \gamma_{100}$ represent the common regression coefficients associated with the various participant-level covariates for each Club; and

μ_{0j} represents the random error associated with Club *j*.

Hierarchical Linear Regression Results

Table A3.1. HLM results of the early literacy analysis (full & final model)

Fixed Effects	Estimate	SE	*t*-ratio	*p*-value	Glass's Delta
Intercept	758.520	9.212	82.340	<.0001	--
STAR Pre-Test Score	0.308	0.039	7.820	<.0001	0.003
Female	20.396	9.345	2.180	0.0298	0.226
Gender_Missing_Flag	-18.180	43.571	-0.420	0.6768	-0.201
Hispanic	0.419	13.125	0.030	0.9746	0.005
Black	-37.989	14.016	-2.710	0.0072	-0.420
Race_Missing_Flag	-39.636	44.400	-0.890	0.3727	-0.439
FRL	-20.913	11.194	-1.870	0.0627	-0.231
FRL_Missing_Flag	17.427	21.034	0.830	0.4092	0.193
Attendance	-0.745	0.574	-1.300	0.1971	-0.008
Attendance_Missing_Flag	9.292	20.102	0.460	0.6459	0.103
TRT	17.299	12.636	1.370	0.1770	0.191
Random Effects	**Estimate**	**SE**	***z*-value**	***p*-value**	
Between-Club Variance	518.06	265.07	1.95	0.0253	
Within-Club Variance	6214.04	506.50	12.27	<0.0001	

Table A3.2. HLM results of the math analysis (full model)

Fixed Effects	Estimate	SE	*t*-ratio	*p*-value	Glass's Delta
Intercept	540.740	16.755	32.270	<.0001	--
STAR Pre-Test Score	0.591	0.048	12.310	<.0001	0.004
Female	10.554	14.324	0.740	0.4619	0.069
Gender_Missing_Flag	31.400	68.700	0.460	0.6480	0.206
Hispanic	4.133	21.506	0.190	0.8478	0.027
Black	-6.894	21.173	-0.330	0.7451	-0.045

Fixed Effects	Estimate	SE	*t*-ratio	*p*-value	Glass's Delta
Race_Missing_Flag	1.999	84.310	0.020	0.9811	0.013
FRL	-33.692	18.286	-1.840	0.0665	-0.221
FRL_Missing_Flag	-47.320	40.695	-1.160	0.2483	-0.311
Attendance	-0.272	0.910	-0.300	0.7657	-0.002
Attendance_Missing_Flag	1.724	33.083	0.050	0.9586	0.011
TRT	37.628	23.245	1.620	0.1154	0.247
Random Effects	**Estimate**	**SE**	**z-value**	***p*-value**	
Between-Club Variance	2857.01	1114.75	2.56	0.0052	
Within-Club Variance	10450	967.43	10.80	<0.0001	

Table A3.3. HLM results of the math analysis (final model)

Fixed Effects	Estimate	SE	*t*-ratio	*p*-value	Glass's Delta
Intercept	538.690	16.559	32.530	<.0001	--
STAR Pre-Test Score	0.596	0.047	12.610	<.0001	0.004
FRL	-34.037	17.929	-1.900	0.0588	-0.224
FRL_Missing_Flag	-35.220	29.689	-1.190	0.2406	-0.231
TRT	40.825	22.721	1.800	0.0816	0.268
Random Effects	**Estimate**	**SE**	**z-value**	***p*-value**	
Between-Club Variance	2932.37	1096.13	2.68	0.0037	
Within-Club Variance	10489	966.08	10.86	<0.0001	

Table A3.4. HLM results of the reading analysis (full model)

Fixed Effects	Estimate	SE	*t*-ratio	*p*-value	Glass's Delta
Intercept	367.120	14.637	25.080	<.0001	--
STAR Pre-Test Score	0.651	0.044	14.700	<.0001	0.003
Female	49.539	17.805	2.780	0.0057	0.240
Gender_Missing_Flag	-51.097	157.020	-0.330	0.7451	-0.247
Hispanic	11.385	23.399	0.490	0.6271	0.055
Black	-15.377	23.913	-0.640	0.5212	-0.074
Race_Missing_Flag	144.840	161.710	0.900	0.3711	0.701
FRL	-20.996	22.657	-0.930	0.3553	-0.102
FRL_Missing_Flag	-7.327	37.119	-0.200	0.8445	-0.035
Attendance	-1.700	0.953	-1.780	0.0798	-0.008
Attendance_Missing_Flag	-62.689	34.538	-1.820	0.0786	-0.303
TRT	-1.267	21.718	-0.060	0.9539	-0.006
Random Effects	**Estimate**	**SE**	**z-value**	***p*-value**	
Between-Club Variance	1098.42	993.52	1.11	0.1345	
Within-Club Variance	22839	1882.32	12.13	<0.0001	

Table A3.5. HLM results of the reading analysis (final model)

Fixed Effects	Estimate	SE	*t*-ratio	*p*-value	Glass's Delta
Intercept	366.850	14.155	25.920	<.0001	--
STAR Pre-Test Score	0.654	0.044	14.890	<.0001	0.003
Female	49.241	17.682	2.780	0.0057	0.238
Gender_Missing_Flag	90.984	51.710	1.760	0.0841	0.440
Attendance	-1.802	0.930	-1.940	0.0584	-0.009
Attendance_Missing_Flag	-63.828	34.083	-1.870	0.0689	-0.309
TRT	-0.518	20.229	-0.030	0.9798	-0.003
Random Effects	**Estimate**	**SE**	**z-value**	***p*-value**	
Between-Club Variance	1047.35	931.76	1.12	0.1305	
Within-Club Variance	23071	1887.73	12.22	<0.0001	

Attachment 4: Summary Statistics for the Baseline and Analytic Samples for Overall Program Impact Analyses

Table A4.1. Pre-Intervention Sample Sizes and Characteristics for the Baseline Sample

Baseline Measures	Intervention Group				Control Group			
	Sample Sizes		Sample Characteristics		Sample Sizes		Sample Characteristics	
	Unit of Assignment	Unit of Analysis	Mean	Standard Deviation	Unit of Assignment	Unit of Analysis	Mean	Standard Deviation
Early Literacy	22	230	741.4	123.4	21	206	734.0	120.5
Reading	24	213	348.5	195.7	21	223	394.6	217.8
Math	22	182	559.0	149.1	19	186	568.7	152.0

Table A4.2. Pre-Intervention Sample Sizes and Characteristics for the Analytic Sample

Baseline Measures	Intervention Group				Control Group			
	Sample Sizes		Sample Characteristics		Sample Sizes		Sample Characteristics	
	Unit of Assignment	Unit of Analysis	Mean	Standard Deviation	Unit of Assignment	Unit of Analysis	Mean	Standard Deviation
Early Literacy	21	189	744.7	127.0	18	141	745.4	115.4
Reading	20	163	363.0	192.2	19	176	390.6	200.0
Math	20	141	579.3	144.4	16	131	574.6	150.8

Table A4.3. Post-Intervention Outcomes for the Analytic Sample and Estimated Effects

Outcome Measures	Intervention Group		Control Group		Estimated Effects	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean Difference	*p*-value
Early Literacy	775.8	100.6	758.5	90.3	17.3	0.177
Reading	366.3	208.6	366.9	206.7	-0.5	0.980
Math	579.5	151.6	538.7	152.2	40.8	0.082