



**Evaluation of the
Building Educated Leaders for Life (BELL) Summer
Learning Program in
Montgomery County Public Schools**

Office of Shared Accountability

January 2017

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Executive Summary

At the request of the Board of Education for Montgomery County Public Schools (MCPS), the Office of Shared Accountability evaluated the Building Educated Leaders for Life (BELL) summer learning program held in MCPS during summer 2016. The target population for BELL was rising third and fourth graders who were enrolled at Title I schools and whose reading or mathematics scores on Measures of Academic Progress (MAP) tests were below the 60th percentile in winter 2016. The evaluation examined implementation of the BELL program, its impact on students' mathematics and reading achievement, and whether that impact varied with different student subgroups and tests.

Summary of Methodology

To examine implementation, BELL staff at each of the eight MCPS sites was interviewed about staffing, training, communication between MCPS and BELL, support from MCPS and BELL, and benefits and challenges with the BELL summer learning program.

To evaluate the impact of the BELL program on student achievement, this study used multiple regression analyses that included both attendees and non-attendees and controlled for students' characteristics, including their initial abilities. The attendees were 815 students in Grades 3 or 4 who attended 19 days or more of the BELL program (out of 25 days) and had MAP test results from fall 2016 (i.e., after the program). One quarter of these students was Black or African American. Seven out of 10 attendees were Hispanic/Latino and a similar percentage received English for Speakers of Other Languages (ESOL) services. Close to 90% qualified for Free and Reduced-price Meals System (FARMS) services and almost one fifth received special education services. Non-attendees were 1,135 students who were invited to BELL but did not attend.

Summary of Results

Implementation. Program managers at each site reported mostly positive experiences with the implementation of the BELL program. The training provided by BELL was described as valuable, inspiring, and effective at communicating what to expect in the day-to-day operation of the program, BELL's vision, and its mission. The only concern expressed about training was a need for more time. Overall, reports from program managers about the BELL curriculum were positive; teachers noted that it was very detailed and aligned with the Common Core. Teachers also liked the information on student learning needs and instructional strategies that was provided with results from the STAR assessments. (BELL administered these tests in the first week of the program.) However, a major concern expressed at nearly all sites was that the materials received at the start of the program did not match the reading and mathematics levels of some students.

At all sites, program staff described the enrichment activities and the field trips as valuable components of the program and engaging to the students.

Site staff indicated that BELL provided an appropriate program for some students with disabilities, especially with its focus on differentiation, but the program could not support students with severe needs or with a need for one-on-one support. To address the needs of English language learners,

two rotating ESOL specialists supported teachers at all sites by modeling lessons and providing resources. Program managers expressed concern that no records were provided about receipt of special education or ESOL services at the start of the program, so teachers started without information about the needs of these students.

Impact of the BELL program on student mathematics skills. Based on multiple regression analyses, there was evidence for a positive impact of the BELL program on MAP scores in mathematics from fall 2016 for attendees in both Grades 3 and 4, among all students and four subgroups: Hispanic/Latino, ESOL recipients, FARMS recipients, and special education recipients. Each of these differences between attendees and non-attendees was statistically significant in both grades. The relationship was stronger for Grade 3 than Grade 4; each of these differences for third graders also was practically significant, meaning it was large enough to be useful to staff in making programmatic decisions. But only the difference for special education recipients was large enough to be useful among fourth graders. There was no evidence in Grades 3 or 4 of an impact among the subgroup of African American or Black students.

Impact of the BELL program on student reading skills. Based on multiple regression analyses, there was some evidence for a positive impact of the BELL program on MAP scores in reading for Grade 3, but no evidence for Grade 4. For third graders, the relationship between attendance and MAP scores in reading was statistically significant among all students and among three subgroups: Hispanic/Latino, ESOL recipients, and FARMS recipients. However, none of these differences between attendees and non-attendees in Grade 3 was practically significant (i.e., large enough to be useful in making instructional decisions). For each group of fourth graders tested, there was no significant (statistically or practically) relationship between attending BELL and reading achievement.

Variations across tests. The above analyses used results from MAP in fall 2016, after the BELL program; students also completed MAP tests in spring 2016 prior to the program. Further, BELL attendees completed STAR assessments (administered by BELL) at the start and end of the program. There was interest in determining whether the impact of the BELL program varied by assessment type (i.e., MAP vs. STAR). However, it was not possible to examine the impact of BELL on STAR scores because non-attendees did not take the STAR tests.

Instead, the analysis examined whether changes in attendees' achievements over time differed between the two tests, MAP and STAR. Effect sizes from bivariate analyses (i.e., comparisons of changes in mean scores) were used; effect sizes are metric-free and thus appropriate for comparing the effects associated with different tests. The effect sizes differed between MAP and STAR for all areas analyzed, indicating that changes in attendees' achievements over time varied, based on the test. The STAR results consistently suggested immediate gains from the beginning to the end of BELL, while the MAP results for changes from spring 2016 to fall 2016 suggested slight declines in Grade 3 math, no change in Grade 4 math, and slight gains in Grade 4 reading. (Data were not available for Grade 3 reading.) However, these bivariate analyses did not address the impact of the BELL program on MAP or on STAR scores; they included attendees only and so there was no comparison group to understand what achievement might have been without attending BELL.

Conclusion and Recommendations

The most accurate sense of the BELL program's impact on students' academic performance came from the multiple regression analyses using MAP scores. They provided evidence of a positive impact of attendance at the BELL program on students' performance in Grade 3 mathematics, Grade 4 mathematics, and Grade 3 reading. The multiple regression analyses of MAP scores provide a more accurate sense of program impact than the bivariate analyses of STAR or MAP scores because 1) the regression employs a comparison group, so there is a sense of how students performed in the absence of BELL and 2) MAP tests cover a wider set of skills and more closely align with the MCPS curriculum than STAR tests.

The findings on implementation and outcomes suggest the following recommendations:

- Continue the BELL program, given its positive impact on students' performance in Grade 3 mathematics, Grade 4 mathematics, and Grade 3 reading for all students, along with three subgroups: Hispanic/Latino, ESOL recipients, and FARMS recipients.
- Examine how to improve the program so it has a stronger impact on Black or African American students.
- Work with BELL to maximize the value of its training for staff through the following:
 - Ensure that all materials are in hand at the start of the training.
 - Provide more time on site before the start of the program, so that program staff can work with the teachers.
 - Provide more training time to cover all the information provided.
- Improve coordination and communication between MCPS and BELL to achieve the following by the start of the program:
 - Ensure that curriculum materials match the mathematics and reading levels of all attendees.
 - Provide student information such as needs for ESOL or special education services.
 - Provide clear information on bus schedules and bus stops to site staff and parents.
- Consider providing extra support with the following:
 - Add a specialist who can support the instruction of students with disabilities.
 - Provide technology support when BELL staff set up their equipment.
- Revisit the schedule for providing a nurse or health technician to each site on every day that students are onsite.

Evaluation of the Building Educated Leaders for Life (BELL) Summer Learning Program in Montgomery County Public Schools

The Board of Education for Montgomery County Public Schools (MCPS) asked the Office of Shared Accountability (OSA) to conduct an evaluation of the BELL (Building Educated Leaders for Life) Summer Learning Program in MCPS, launched during the summer of 2016. The BELL program provided expanded learning opportunities for students in Title I schools who were performing below benchmarks in reading and mathematics; the program aimed to improve students' academic success, self-confidence, and social skills. The purpose of this evaluation was to examine implementation of the program and to assess gains in the academic achievement of the students enrolled in the program.

Background

During the summer, there is a tendency for students, especially those from low-income families, to lose achievement gains made during the school year. One response to preventing summer learning loss is a summer learning program. For the summer of 2016, MCPS and the Montgomery County Department of Health and Human Services (MCDHHS) collaborated with the BELL organization to offer a summer learning program (Montgomery County Council Presentation, 2016).

BELL is a national organization that provides extended learning opportunities after school and during the summer; it grew out of a community service project at Harvard Law School and has served more than 100,000 students nationwide since 1992 (BELL, 2016). The BELL Summer Learning Program is designed to achieve the following goals:

- Students will increase their literacy and math skills.
- Students will strengthen their self-confidence.
- Students will improve their social skills.
- Parents/guardians will become more engaged in their children's education.

To accomplish its goals, the BELL Summer Learning Program provides a summer academic and enrichment program to eligible rising third and fourth grade students who are from Title I schools and show academic need. If successful in preventing summer learning loss, the program should narrow the achievement gap and help students transition from grade to grade successfully.

BELL Program at MCPS

The BELL program in MCPS was designed to offer both rigorous instruction and engaging activities. The academic component of BELL (i.e., language arts and mathematics programming) was scheduled for Monday through Thursday mornings for the length of the program. BELL partnered with Scholastic to develop a customized curriculum for the five-week program. BELL also provided, for both language arts and mathematics, professional development and instructional materials including activities, teacher's guides, and resources. To support data-driven instruction and to measure student progress, BELL administered STAR assessments in reading and

mathematics to each student (Renaissance Learning, 2014) during the first week and again in the last week of the program.

Enrichment learning was scheduled for each afternoon, Monday through Thursday, in areas such as STEM (science, technology, engineering, and math), physical activity, healthy living, character education, and creative arts. These experiential and project-based learning opportunities supported academic learning, as well as social and emotional learning. One day per week (usually Friday) the schedule included non-classroom activities that were designed to expand student learning, such as hands-on enrichment opportunities, field trips, and community service projects (BELL & MCPS, 2016).

Breakfast and lunch were offered each day, along with transportation to and from the program sites. The program operated 6.5 hours per day, five days a week, for five weeks in the summer, June 27 through July 29, 2016.

Participating Schools, Students, and Staff

The BELL program was located at eight MCPS elementary school sites in the summer of 2016 (see list in Appendix A). The eight sites were strategically chosen from among the 25 Title I elementary schools in MCPS to be the most accessible to students in all Title I schools.

The target population for the program was those rising third and fourth graders who were enrolled in Title I schools and whose reading or math scores on Measures of Academic Progress (MAP) assessments were below the 60th percentile in winter 2016. More than 2,000 eligible students were identified and their parents/guardians were sent a description of the BELL program and an application (see copy in Appendix B). Invitations went to students from all Title I schools, along with students at one non-Title I school that feeds into a Title I middle school. The program had capacity for 1,050 students and enrolled students on a first come, first served basis.

Staff at each BELL site included a program manager, program assistant, instructional coach, and a team of teachers for each classroom. (One site lacked a program assistant). Teaching teams comprised an academic teacher for the morning, an enrichment teacher for the afternoon, and a teaching assistant for the full day. Also, each site had access to the services of an English Language Learners (ELL) coach. BELL administered hiring of all staff, many of them MCPS employees.

Further, BELL provided training for staff before the start of the program. Management teams from each site—comprising the program manager, instructional coach, and program assistant—had training sessions after school during the last week of the school year, plus for two full days the following week. BELL provided two full-day training sessions for teachers and teaching assistants. The full-day training sessions were at the BELL sites.

Funding and Administration

In November 2015, the Montgomery County Council approved a special appropriation to support implementation of the BELL program in MCPS. The program was funded through a public-private partnership with the Norman R. and Ruth Rales Foundation, which provided funds for the program

and supported local fundraising efforts to raise the remaining program funds. Planning and implementation of the 2016 summer program was a collaboration among MCDHHS, MCPS, and BELL (Montgomery County Council Presentation, March 1, 2016).

Review of Selected Literature

Summer Learning Loss

A growing body of research has shown that students from low-income communities suffer greater academic loss during the summer vacation than their counterparts from more wealthy communities (Cooper et al., 1996; Entwisle & Alexander, 1992). Cooper et al. (1996) conducted a meta-analysis of studies of summer learning loss published between 1975 and 1994. Their analysis indicated that the overall summer loss was equal to about one month on a grade-level equivalent scale; for all students, the detrimental effect of summer break was more pronounced for mathematics than for reading. However, when the effect of family income was analyzed, middle-class students gained in reading and language achievement over the summer, while lower-class students showed a significant loss. Consistent with this finding, Downey, von Hippel, and Broh (2004) analyzed the Early Childhood Longitudinal Study data and found that economically disadvantaged children fell about 2.5 months behind more advantaged students in reading during the summer months between kindergarten and Grade 1. Of further concern, the gap between economically disadvantaged and advantaged students that results from summer learning loss has been shown to be cumulative; Hayes and Grether (1983) estimated that as much as 80% of the reading achievement gap that existed between economically advantaged and disadvantaged students at sixth grade could be attributed to summer learning loss.

The “faucet theory” (Entwisle, Alexander, & Olson, 2001) has been posited to explain the phenomenon of summer learning loss. The theory suggests that opportunities to learn and access to educational resources are “turned on” for all children during the school year. As a result, gains made during the school year are similar for students from different social and economic backgrounds. But during the summer break when the faucet is “turned off,” students have different opportunities to learn and different access to resources leading to different outcomes in learning.

To reduce the summer learning loss among low-income students, a number of strategies have been adopted. Many interventions involve traditional summer school programs, focusing on remediation and skill development. Some states and districts have implemented summer reading programs that rely on prizes and rewards to encourage children to read during the summer break. An emerging body of evaluation research provides evidence that summer programs may benefit student achievement. A study conducted by RAND Education (McCombs et. al., 2011) assessed the evidence on effective summer learning programs and concluded that all types of summer programs—including mandatory summer programs, voluntary summer programs, and programs that encourage students to read at home in the summer—can mitigate summer learning losses and even lead to achievement gains.

Evaluation of the BELL Program

The BELL program has conducted several internal evaluations that have reported promising findings of academic improvements over the summer (BELL, 2015; T. Cooper, 2004). In 2006, a large, rigorous study of BELL summer programs in New York and Boston was conducted (Chaplin and Capizzano, 2006). More than 1,000 elementary school students who applied to BELL summer programs were randomly chosen to be in either a treatment group that participated in the BELL summer program or a comparison group that did not. Random selection was possible because the number of applicants was more than double the number of slots available. Independent researchers collected student reading tests, student surveys, and teacher surveys.

The study found that children who attended the BELL summer program gained about a month's worth of reading skills more than their counterparts who did not attend the BELL program. When the authors controlled for the rates of actual participation in the BELL program, the estimated improvement in reading test scores was about two months. The impact of the program on test scores appears similar to that of a similar amount of school during the school year. The study also found a positive impact on the degree to which parents/guardians encouraged their children to read. No effects were found for academic self-perceptions or social behaviors, and the study found no interactions between reading test scores and grade, race, or gender. The authors summarized the findings to say that the BELL program, as implemented in these two cities in 2005, "had important impacts on summer learning activities, parent involvement in reading, and on reading test scores." (Chaplin & Capizzano, 2006, p. 38).

Evaluation Scope and Questions

The main purpose of this study was to assess gains in the academic achievement of the students enrolled in the program. A secondary purpose was to provide formative information for program administrators by examining the implementation of the BELL program.

The evaluation addressed the following questions.

1. How was the BELL program implemented in MCPS, with regard to the curriculum, staff training, and program operation?
2. What was the impact of the BELL program on student mathematics skills? Did the mathematics impact of the program vary by student subgroups?
3. What was the impact of the BELL program on student reading skills? Did the reading impact of the program vary by student subgroups?
4. Did the impact of the BELL program on student skills in mathematics or reading vary by assessment type for all students or for student subgroups?

Methodology

Evaluation Design

The design for evaluation question 1 to examine the implementation of the BELL program in MCPS was nonexperimental and relied on descriptive data provided by staff at the BELL sites.

The design for evaluation questions 2, 3, and 4 to examine the outcomes of the BELL program was a quasi-experimental design (Shadish, Cook & Campbell, 2002) as shown in Figure 1. Reading and mathematics performance of two groups, students attending the BELL program and students in a comparison group, were compared. The emphasis in this design was on maximizing internal validity of the study by controlling for confounding variables.

Figure 1
Design of the BELL program evaluation of outcomes

	Pre-program	BELL		Post-program
BELL student group	O_1	=> X =>		O_2
Comparison group (Non-BELL)	O_1	=> C =>		O_2

O_1 – Spring 2016 local assessment results for Grades 2 and 3 in mathematics and reading

X – Five weeks of BELL program treatment from June 27, 2016 through July 29, 2016

C – Non-BELL (no BELL treatment)

O_2 – Fall 2016 local assessment results for Grades 3 and 4 in mathematics and reading

To improve the internal validity of the findings, this evaluation used two control techniques: control by study design and control by statistical techniques. To control by study design, a comparison group of nonparticipating students at Title I schools was identified and included in the analyses. Further, advanced statistical analyses that controlled for the initial abilities of both participants and nonparticipants were used. More details on both methods of controls follow.

Sample, Data Sources, and Measures: Evaluation of Implementation

Sample. The sample to gather data on the implementation of the BELL program in MCPS was staff from each of the eight program sites.

Site visits and interviews. During the second and third weeks of the 2016 BELL summer program (July 13-20, 2016), one of the evaluators visited every program site. The evaluator met with the program manager at each site; at some sites the meeting included the instructional coach and program assistant. The purpose of the meeting was to gather information about the implementation of the BELL program at each of the sites. Topics included: staffing at the site, training received by program staff and teachers, the BELL curriculum, coordination and communication between BELL and MCPS, support from BELL and from MCPS, and implementation challenges.

Teacher surveys. BELL administered surveys to teachers during the last week of the program. The evaluators requested a data file of survey responses for the MCPS sites; however, the file was not provided in time for inclusion in this report.

Sample, Data Sources, and Measures: Outcome Evaluation

Local assessments. Measures of Academic Progress (MAP) are integrated collections of computerized assessments (Northwest Education Association, 2008 and 2011). These tests include multiple-choice items and a variety of other item types and are designed to provide educators with instructional information about what students are ready to learn. Scores on MAP tests are reported on the Rasch Unit (RIT) scale. The equal-interval property of the RIT scale scores makes them especially appropriate for various statistical purposes, including measuring change over time.

RIT scores from the fall 2016 administration of the Measures of Academic Progress-Reading (MAP-R) were the outcome (or post-program) measure in reading for all students. For the rising Grade 4 students, spring 2016 MAP-R scores were the pre-program measure. For the rising Grade 3 students, the pre-program measures in reading were reading levels from the spring 2016 Assessment Program in Primary Reading (MCPS AP-PR) because Grade 2 students in MCPS do not take MAP-R. In advanced analyses, the pre-program measure can be any measure prior to the program that is highly correlated with the post-program measure.

RIT scores from the fall 2016 administration of the Measures of Academic Progress-Mathematics (MAP-M) were the outcome measure in mathematics for all students. For the rising Grade 4 students, RIT scores from the spring 2016 MAP-M were the pre-program measures. For the rising Grade 3 students, the pre-program measures in mathematics were RIT scores in mathematics from the spring 2016 administration of Measures of Academic Progress-Primary Grades (MAP-P), because Grade 2 students in MCPS do not take MAP-M.

BELL assessments. As noted above, the BELL program tested reading and math skills of program participants with STAR assessments during the first week and the last week of the program. STAR assessments are computer-adaptive, multiple choice tests; each subject assessment (reading and mathematics) can be administered in about 20 minutes. Scale scores from the STAR assessments (provided by the BELL program) and the RIT scale scores from the MAP assessments were analyzed for evaluation question 4 regarding the effects of different types of assessments.

Student data. MCPS student-level records provided data on local assessments and demographics, including gender, racial/ethnic group, and receipt of English for Speakers of Other Languages (ESOL) services, Free and Reduced-price Meals System (FARMS) services, or special education services, for students in the BELL program and students in the comparison group. Student attendance at the summer program was recorded daily by staff at each BELL program site; the BELL program provided student-level attendance data to MCPS.

Sample. There were two groups of students for the outcome evaluation. The sample of BELL participants was all students who met the attendance threshold, defined as attending BELL in summer 2016 for 19 or more days (out of 25 days), and who had data from fall 2016 on MAP-R or MAP-M assessments. Table 1 presents the demographic characteristics of this sample of 815 students. They were evenly split between female and male. One quarter were Black or African American. Seven out of 10 of these students were Hispanic/Latino and a similar percentage received English for Speakers of Other Languages (ESOL) services. Not surprisingly, because BELL served students in Title I schools, close to 9 out of 10 qualified for Free and Reduced-price Meals System (FARMS) services. Lastly, almost one fifth received special education services.

Table 1
 Characteristics of Study Samples at the 2016 BELL Program

	Attendees ^a		Non-attendees ^b	
	<i>N</i>	%	<i>N</i>	%
Total	815	100.0	1,135	100.0
Grade level as of fall 2016				
Grade 3	382	46.9	424	37.4
Grade 4	433	53.1	711	62.6
Gender				
Female	403	49.4	539	47.5
Male	412	50.6	596	52.5
Race/ethnicity				
American Indian	≤5	≤1.0	≤5	≤1.0
Asian	24	2.9	39	3.4
Black or African American	202	24.8	207	18.2
Hispanic/Latino	571	70.1	834	73.5
White	9	1.1	35	3.1
Pacific Islander	≤5	≤1.0	0	0.0
Two or More Races	6	0.7	16	1.4
Receipt of services during school year 2015–2016				
ESOL	575	70.6	776	68.4
FARMS	723	88.7	990	87.2
Special education	157	19.3	204	18.0

^aLimited to students who attended BELL for 19 or more days and had MAP scores from fall 2016.

^bLimited to students who did not attend BELL and had MAP scores from fall 2016.

The second group of students for the outcome evaluation was non-attendees. They included all students who were invited to attend BELL in summer 2016, did not attend any days of the program, and had data from fall 2016 on MAP-R or MAP-M assessments. Demographically, the comparison group was similar (Table 1). There were two exceptions. There were more third graders among attendees than (47%) than non-attendees (37%). Secondly, there was a higher percentage of Black or African American students among attendees (25%) than non-attendees (18%).

Analytical Procedures

To address the first evaluation question on implementation, data collected during site visits were summarized by interview topics.

The analyses to address the evaluation questions on impact included both statistical significance tests and effect sizes. Multiple regression analyses were used to evaluate the impact of the BELL program while controlling for differences in demographic characteristics (i.e., gender, racial/ethnic group, receipt of ESOL, receipt of FARMS, receipt of special education services) and initial (pre-program) achievement level. Effect sizes were calculated to judge whether the observed differences between student groups (BELL vs. comparison) were large enough to be of practical significance to educators (American Psychological Association, 2010). For the multiple regression analyses, standardized regression coefficients (β values) were used as an effect size measure (Kline, 2005). To interpret the magnitude of β values, the following guidelines from Cohen (1988) were used: .10, .30, and .50 which correspond to small, medium, and large effect sizes, respectively.

Results

Findings for Question 1: How was the BELL program implemented in MCPS?

Findings of the implementation of the program came from interviews with BELL staff at each of the eight sites in MCPS. The interviewees at each site included the program managers; at some sites, when schedules allowed, the instructional coach and program assistant also participated in the interviews.

Six of the eight program managers were MCPS employees. Their school-year positions included ESOL teacher, reading specialist (two), staff development teacher (two), and special education teacher. Two program managers worked in schools in Washington, D.C. during the school year. All program managers had worked previously in summer programs, including six who had worked with MCPS Extended Learning Opportunities.

BELL training. All program managers and other site staff reported attending the full complement of BELL training sessions (see description in background above). All staff members were positive about their experience in the training.

Program managers reported several aspects of the training as particularly valuable and informative:

- The BELL vision—site staff thought the presentation of the BELL vision and mission was inspiring and exciting.
- The BELL model—site staff reported that they learned what to expect and the day-to-day activities of the program, the core values of BELL, the BELL culture, how the program was developed.
- The passion, skills, and energy of the trainers—site staff noted that the trainings were very well-planned and well presented, the trainers were engaging, and participants were respected as adult learners.

Program managers noted several issues for improvement related to the training:

- Availability of curriculum materials—site staff noted that materials were not in hand during part of the training, making it more challenging to become familiar with the curriculum.
- More time on site—several program managers expressed the need to spend more time on site, to work with the teachers before the start of the program.
- More time on curriculum—two program managers expressed the wish for more time to cover all the information that was provided; some suggested starting the training sessions earlier in May.

Support for BELL sites. Site staff reported receiving timely and useful support from both BELL and the MCPS Title I Office. Staff noted that the BELL program liaison and his team were available and responsive when support was needed and the program liaison met regularly with site staff to go over questions or issues. The BELL program office handled staff issues, so if a substitute teacher was needed or if a staff concern arose, the site staff could call BELL to make

the necessary arrangements. In addition, MCPS provided support for the sites when needed; site staff reported that Title I staff had come to help at the site, the transportation office was responsive to concerns that arose, and the school principal and office staff were helpful when needed.

Student attendance at BELL. Site staff reported that the average daily attendance at the time of the visit was 90% or higher. Staff at seven of the eight sites reported that they made calls to the parent on the day a student was absent. The expectation for attendance at BELL was that students would attend every day. The BELL attendance policy indicated that students who missed multiple days would not be allowed to continue the program. Program managers reported varied levels of enforcing the attendance policy, but overall, the expectation for consistent attendance was maintained. Staff at all eight of the BELL sites described ways that they supported regular attendance, in addition to contacting parents about any absence. All sites offered incentives for attendance, such as raffles, a prize box, “scholar dollars,” or a party for the class.

BELL curriculum and program. Overall, site staff had positive feedback about the BELL curriculum. Staff noted that the curriculum was very detailed and aligned with the Common Core, and that teachers were getting comfortable with it. A number of site staff reported that teachers liked the information that was supplied by the STAR assessments. Data from the initial STAR assessment included student learning needs, instructional strategies, and ways to group students. However, a major issue with the BELL curriculum that was reported at nearly every site, was that the materials received did not match the levels of the students. Students were working at a lower level than the materials received, so site staff had to request supplemental materials to meet students’ needs. BELL was able to provide appropriate materials, but time was lost in some cases.

Site staff reported that students used Chromebooks every day in BELL classrooms for enrichment, publishing, or accessing materials. BELL provided a list of online resources that aligned with the curriculum.

In addition to the curriculum in reading and math, the BELL summer program included enrichment activities and field trips. Staff feedback was positive about these two components; staff reported that the students appeared very engaged in the activities and excited about the field trips. At most sites, students participated in two enrichment activities each day, such as the following: STEM, technology, performing arts, culinary activities, theater, art, music, dance, creative writing, Chinese culture, poetry, sports, photography, sign language, zumba, “Legos and literacy,” and book publishing. Although a few BELL teachers taught both the morning academic content and an afternoon enrichment activity, in most cases, the academic and enrichment components were taught by different teachers.

Each site also provided three off-site field trips and one or more special “theme” days, such as college day or career day. Field trip destinations included the Spy Museum, Elioak Farm, a jazz concert at Wolf Trap, the National Zoo, Imagination Stage, and the Natural History Museum.

Students with disabilities and ELL students. Site staff indicated that BELL provided an appropriate program for some students with disabilities, but could not support those with severe needs or students who need one-on-one support. Several program managers noted that BELL had a focus on differentiation, that teachers were able to adapt the program for students with different

needs, and that some of the BELL teachers who had special education experience were more readily able to support the students. Several program managers also reported that it would be helpful to have a specialist to support the instruction of students with disabilities. To provide instruction for ELL students, the BELL program included two ESOL specialists who supported teachers at the eight sites by modeling lessons and providing resources.

A major concern expressed by the site staff was that no records were provided ELL students or students with disabilities at the start of the program. As a result, instructional planning was difficult for teachers and ESOL specialists when the students' specific needs were not known. After this concern was expressed, the sites received a summary snapshot of students' IEP or their ELL level. Program managers would like to have student information before the program starts.

Overall feedback: What is best about BELL? Perceptions of the site staff, specifically program managers and some instructional coaches and program assistants, were very positive about the BELL program. When asked "What is the best thing about the BELL program?", staff members had numerous and varied responses. Among the most frequently mentioned was the focus on the student—the child's experience came first and the program supported the whole child. The students were happy to come and very engaged in their learning activities. BELL provided different opportunities for students and allowed them to succeed at something new.

Staff reported that the quality of the program was outstanding, that BELL had a growth mindset approach, and that the program threaded attention to the social-emotional development of the students through all aspects. Several staff described BELL as a community or as a team effort; staff also appreciated the opportunity to build relationships with students and families.

Training was recognized as a very valuable aspect of the BELL program. Several site staff commented that the BELL training helped make them better teachers. Site staff noted these positive features of the training activities: the clarity and breadth of the information conveyed and the energy and passion of the BELL trainers.

Overall feedback: Areas for improvement. Program managers and other site staff reported a number of areas that needed improvement. Some of them were noted above in staff feedback about program components, such as concern that information on students' needs for ESOL or special education services was not available before the start of the program. This issue was just one example of the need for more coordination and communication between MCPS and BELL. Further, other information about students was unavailable to teachers or other site staff, such as medical records and eligibility for weekend food bags. Another issue that required collaboration between BELL and MCPS was bus transportation. Most sites experienced some challenges in the first few days of the program, but in all cases the difficulties were resolved.

A few items were of concern at only one or two sites. Because the BELL program and materials were separate from those of MCPS, BELL staff needed to set up some of their equipment, such as printers and copiers. Two sites had difficulties with equipment but did not have available technical support. At one site, the program manager was concerned about the lack of a trained health technician or nurse every day; although the program assistant took over these duties on days without a health technician or nurse.

Findings for Question 2: Mathematics

What was the impact of the BELL program on student mathematics skills? Did the mathematics impact of the program vary by student subgroups?

To evaluate the impact of the BELL program on student skills in mathematics, this study used multiple regression analysis to test for a significant relationship between attendance at BELL and student achievement on MAP-M for the group of all students and separately for each student subgroup of 35 or more students. The sample included both attendees and non-attendees (students who were invited but did not attend). For multiple regression analyses, standardized regression coefficients (β values) were used as an effect size measure to determine if the differences were large enough to be useful in making programmatic decisions (Kline, 2005). To interpret the magnitude of β values, the following guidelines from Cohen (1988) were used: .10, .30, and .50 which correspond to small, medium, and large effect sizes, respectively.

All Students

In both Grades 3 and 4, BELL attendees as a group had higher mean scale scores on the test of math achievement (MAP-M) in the fall after the BELL program, than the comparison students (Table 2.1).

Table 2.1
Mean and Standard Deviation of MAP-M Scale Scores for
Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	<i>N</i>	Mean	Standard deviation	<i>N</i>	Mean	Standard deviation
Grade 3	377	179.2	9.2	412	176.4	9.3
Grade 4	427	190.0	9.3	686	189.5	10.5

The regression analysis confirmed the positive relationship between BELL attendance and mathematics skills. The relationship was statistically significant for both Grade 3 ($\beta = .10$, $p < .001$) and Grade 4 ($\beta = .04$, $p < .05$) (Table 2.2). This relationship also was practically significant for Grade 3, with a small effect size ($\beta = .10$), meaning that the difference between BELL attendees and non-attendees, although small, was large enough to be useful to educators.

Table 2.2
The Relationship between BELL Attendance and MAP-M Scale Scores for Grades 3 and 4

	Attendance at BELL: <i>B</i> (<i>SE</i>)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R ²
Grade 3 (<i>N</i> = 789)	1.82 (.47)	0.10***	270.82 (3, 785)	0.51
Grade 4 (<i>N</i> = 1,113)	0.91 (.38)	0.04*	485.63 (4, 1,108)	0.64

* $p < .05$, ** $p < .01$, *** $p < .001$.

Subgroups

Black or African American students. Among Black or African American students, BELL attendees in both Grades 3 and 4 had a slightly higher mean scale score on the MAP-M in the fall after the BELL program, than the comparison students (Table 2.3).

Table 2.3
Mean and Standard Deviation of MAP-M Scale Scores for Black or African American Students in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	92	177.3	10.3	74	176.4	10.3
Grade 4	108	189.0	10.4	130	188.6	11.0

The regression analysis did not indicate a significant (statistically or practically) relationship between attending BELL and math achievement for Black or African American students, in either Grade 3 or Grade 4 ($\beta < .10$, $p > .05$) (Table 2.4).

Table 2.4
The Relationship between BELL Attendance and MAP-M Scale Scores for Black or African American Students in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R ²
Grade 3 (N = 166)	-0.44 (1.08)	-0.02	52.7 (4, 161)	0.56
Grade 4 (N = 238)	0.16 (0.94)	0.01	73.7 (4, 233)	0.55

* $p < .05$, ** $p < .01$, *** $p < .001$.

Hispanic/Latino. Among Hispanic/Latino students, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-M in the fall after the BELL program, than the comparison students (Table 2.5).

Table 2.5
Mean and Standard Deviation of MAP-M Scale Scores for Hispanic/Latino Students in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	264	179.0	9.2	312	176.3	9.1
Grade 4	304	189.9	9.0	498	189.2	10.2

As with all students, the regression analysis confirmed the positive relationship between BELL attendance and mathematics skills for Hispanic/Latino students. The relationship was statistically significant for both Grade 3 ($\beta = .10$, $p < .001$) and Grade 4 ($\beta = .06$, $p < .01$) (Table 2.6). This relationship also was practically significant for Grade 3, with a small effect size ($\beta = .10$), meaning that the difference in scores between attendees and non-attendees was large enough to be useful to educators.

Table 2.6
The Relationship between BELL Attendance and MAP-M Scale Scores for Hispanic/Latino Students in Grades 3 and 4

	Attendance at BELL: <i>B</i> (<i>SE</i>)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R ²
Grade 3 (<i>N</i> = 576)	1.86 (0.56)	0.10***	178.5 (3, 572)	0.48
Grade 4 (<i>N</i> = 802)	1.30 (0.44)	0.06**	271.1 (5, 796)	0.63

p* < .05, *p* < .01, ****p* < .001.

ESOL recipients. Among students who received ESOL services prior to the summer, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-M in the fall after the BELL program, than the comparison students (Table 2.7).

Table 2.7
Mean and Standard Deviation of MAP-M Scale Scores for ESOL Recipients in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	<i>N</i>	Mean	Standard deviation	<i>N</i>	Mean	Standard deviation
Grade 3	281	179.3	8.7	308	176.2	8.7
Grade 4	288	189.0	9.5	441	188.3	10.0

As with all students, the regression analysis confirmed the positive relationship between BELL attendance and mathematics skills for ESOL recipients. The relationship was statistically significant for both Grade 3 ($\beta = .11, p < .001$) and Grade 4 ($\beta = .07, p < .01$) (Table 2.8). This relationship also was practically significant for Grade 3, with a small effect size ($\beta > .10$), meaning that the difference in scores between attendees and non-attendees was large enough to be useful to educators.

Table 2.8
The Relationship between BELL Attendance and MAP-M Scale Scores for ESOL Recipients in Grades 3 and 4

	Attendance at BELL: <i>B</i> (<i>SE</i>)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R ²
Grade 3 (<i>N</i> = 589)	2.05 (0.54)	0.11***	189.0 (3, 586)	0.49
Grade 4 (<i>N</i> = 729)	1.42 (0.48)	0.07**	183.4 (6, 722)	0.60

p* < .05, *p* < .01, ****p* < .001.

FARMS recipients. Among students who received FARMS services prior to the summer, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-M in the fall after the BELL program, than the comparison students (Table 2.9).

Table 2.9
Mean and Standard Deviation of MAP-M Scale Scores for FARMS Recipients in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	<i>N</i>	Mean	Standard deviation	<i>N</i>	Mean	Standard deviation
Grade 3	338	181.4	11.7	363	179.1	12.2
Grade 4	375	189.8	9.2	598	189.1	10.4

As with all students, there was a positive relationship between BELL attendance and mathematics skills for FARMS recipients. The relationship was statistically significant for both Grade 3 ($\beta = .10, p < .001$) and Grade 4 ($\beta = .05, p < .05$) (Table 2.10). This relationship also was practically significant for Grade 3, with a small effect size ($\beta = .10$), meaning that the difference in scores between attendees and non-attendees was large enough to be useful to educators.

Table 2.10
The Relationship between BELL Attendance and MAP-M Scale Scores for FARMS Recipients in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 ($N = 701$)	1.89 (.50)	0.10***	220.9 (3, 697)	0.49
Grade 4 ($N = 973$)	0.97 (.40)	0.05*	420.8 (4, 968)	0.63

* $p < .05$, ** $p < .01$, *** $p < .001$.

Special education recipients. Among students who received special education services prior to the summer, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-M in the fall after the BELL program, than the comparison students (Table 2.11).

Table 2.11
Mean and Standard Deviation of MAP-M Scale Scores for Special Education Recipients in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	55	177.5	8.0	66	171.9	9.9
Grade 4	91	185.7	10.0	119	181.9	11.8

As with all students, there was a positive relationship between BELL attendance and mathematics skills for special education recipients. The relationship was statistically significant for both Grade 3 ($\beta = .13, p < .05$) and Grade 4 ($\beta = .10, p < .05$) (Table 2.12). This relationship also was practically significant for both groups, with a small effect size ($\beta \geq .10$), meaning that the difference in scores between attendees and non-attendees was large enough to be useful to educators.

Table 2.12
The Relationship between BELL Attendance and MAP-M Scale Scores for Special Education Recipients in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 ($N = 121$)	2.38 (1.05)	0.13*	58.8 (4,116)	0.66
Grade 4 ($N = 210$)	2.13 (1.00)	0.10*	152.0 (2, 207)	0.59

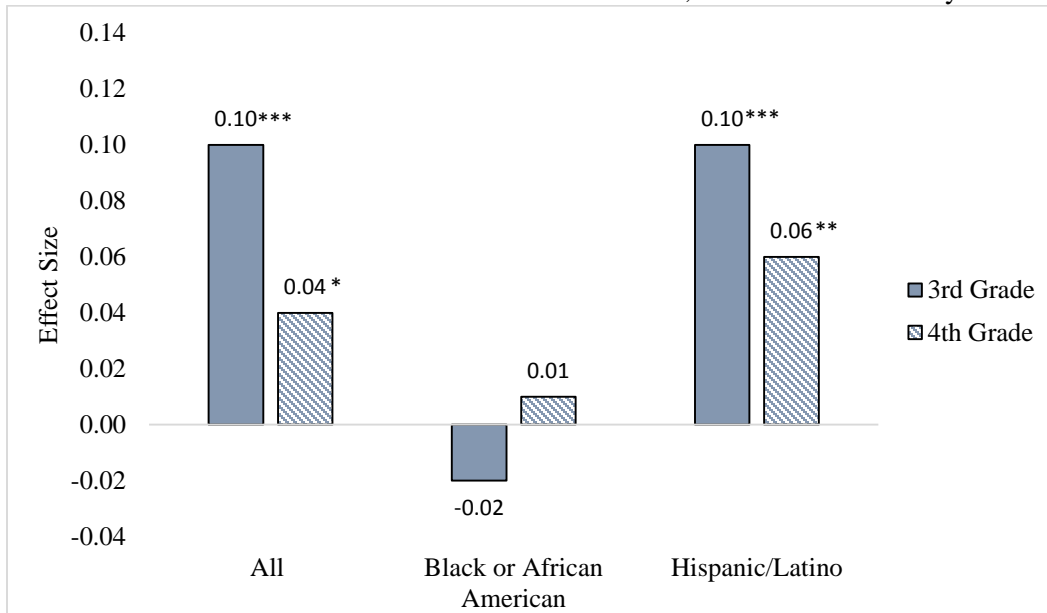
* $p < .05$, ** $p < .01$, *** $p < .001$.

Summary. There was evidence for a positive impact of the BELL program on mathematics skills for attendees in both Grades 3 and 4 among all students and among four subgroups: Hispanic/Latino, ESOL recipients, FARMS recipients, and special education recipients. Each of these differences between attendees and non-attendees was statistically significant in both Grade 3 and Grade 4. The relationship was stronger for Grade 3 than Grade 4; each of these differences

was practically significant for third graders, but only the difference for special education recipients was practically significant for fourth graders (Figures 2 and 3). Lastly, there was no evidence in either Grades 3 or 4 of an impact among the subgroup of African American or Black students.

Figure 2

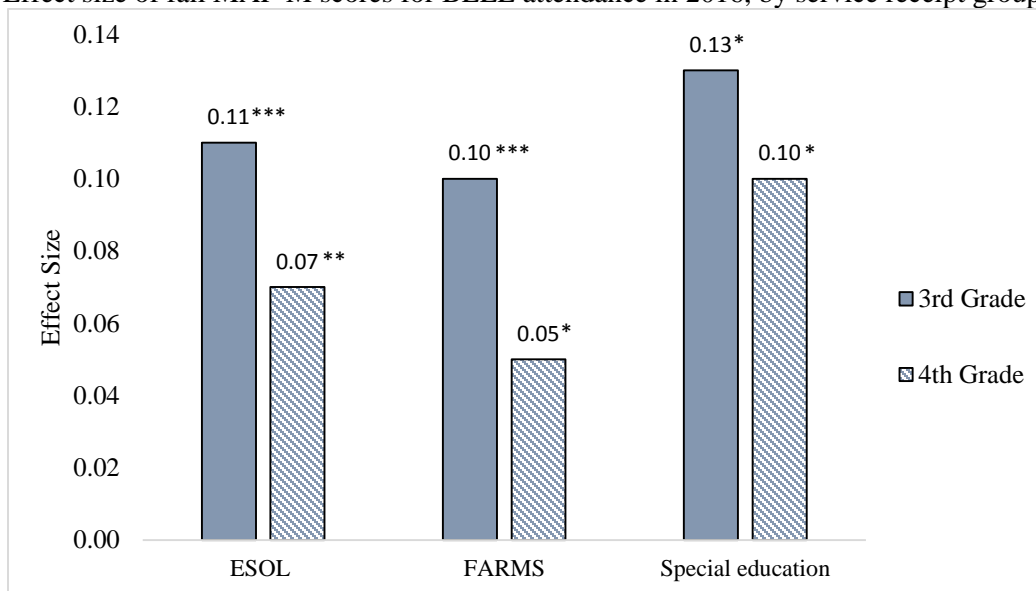
Effect size of fall MAP-M scores for BELL attendance in 2016, for all students and by race/ethnicity



Note. The number of students included in each analysis is in Tables 2.2, 2.4, and 2.6 above.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 3

Effect size of fall MAP-M scores for BELL attendance in 2016, by service receipt groups



Note. The number of students included in each analysis is in Tables 2.8, 2.10, and 2.12 above.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

Findings for Question 3: Reading

What was the impact of the BELL program on student reading skills? Did the reading impact of the program vary by student subgroups?

The approach for evaluating the impact of the BELL program on student skills in reading was the same as that for mathematics. This section presents the results of multiple regression analyses to test for a significant relationship between attendance at BELL and student achievement for the group of all students and separately for each student subgroup of 35 or more students. The sample included both attendees and non-attendees (students who were invited but did not attend). For multiple regression analyses, standardized regression coefficients (β values) were used as an effect size measure to determine if the differences were large enough to be useful in making programmatic decisions (Kline, 2005). To interpret the magnitude of β values, the following guidelines from Cohen (1988) were used: .10, .30, and .50 which correspond to small, medium, and large effect sizes, respectively.

All Students

In Grade 3, BELL attendees as a group had higher mean scale scores than the comparison students on the test of reading achievement (MAP-R) in the fall after the BELL program (Table 2.13). However, for Grade 4 students, non-attendees had a slightly higher mean scale score on MAP-R.

Table 2.13
Mean and Standard Deviation of MAP-R Scale Scores for
Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	<i>N</i>	Mean	Standard deviation	<i>N</i>	Mean	Standard deviation
Grade 3	365	171.9	12.7	400	169.8	12.7
Grade 4	425	184.2	13.5	698	184.4	14.8

The regression analysis confirmed a positive relationship between BELL attendance and reading skills for Grade 3. The relationship was statistically significant ($\beta = .07, p < .01$) but not practically significant ($\beta < .10$) (Table 2.14). There was no significant relationship for Grade 4, meaning that reading achievement did not differ between BELL attendees and non-attendees.

Table 2.14
The Relationship between BELL Attendance and MAP-R Scale Scores for
Grades 3 and 4

	Attendance at BELL: <i>B</i> (<i>SE</i>)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 (<i>N</i> = 765)	1.78 (0.69)	0.07**	148.4 (4, 760)	0.44
Grade 4 (<i>N</i> = 1,123)	-0.13 (0.50)	-0.00	799.4 (3, 1,119)	0.68

* $p < .05$, ** $p < .01$, *** $p < .001$.

Subgroups

Black or African American students. Among Black or African American students, BELL attendees in Grade 3 had higher mean MAP-R scale scores than the comparison students (Table 2.15). However, for Grade 4 students, non-attendees had a higher mean scale score on the MAP-R.

Table 2.15
Mean and Standard Deviation of MAP-R Scale Scores for Black or African American Students in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	87	173.9	12.6	73	172.8	14.9
Grade 4	108	187.0	13.4	130	187.9	14.5

The regression analysis did not indicate a significant (statistically or practically) relationship between attending BELL and reading achievement for Black or African American students, in either Grade 3 or Grade 4 ($\beta < .10$, $p > .05$) (Table 2.16).

Table 2.16
The Relationship between BELL Attendance and MAP-R Scale Scores for Black or African American Students in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R ²
Grade 3 (N = 160)	0.83 (1.83)	0.03	33.4 (2, 157)	0.29
Grade 4 (N = 238)	-1.80 (1.13)	-0.06	192.54 (2, 235)	0.62

* $p < .05$, ** $p < .01$, *** $p < .001$.

Hispanic/Latino. Among Hispanic/Latino students, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-R in the fall after the BELL program, than the comparison students (Table 2.17).

Table 2.17
Mean and Standard Deviation of MAP-R Scale Scores for Hispanic/Latino Students in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	259	171.2	12.9	302	169.5	12.4
Grade 4	298	183.2	13.0	505	183.1	14.5

The regression analysis confirmed a positive relationship between BELL attendance and reading skills for Hispanic/Latino students in Grade 3. The relationship was statistically significant ($\beta = .08$, $p < .01$) but not practically significant ($\beta < .10$) (Table 2.18). For Grade 4, however, there was no significant relationship, meaning that reading achievement did not differ between BELL attendees and non-attendees.

Table 2.18
The Relationship between BELL Attendance and MAP-R Scale Scores for
Hispanic/Latino Students in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 ($N = 561$)	2.10 (0.80)	0.08**	90.15 (5, 555)	0.44
Grade 4 ($N = 803$)	0.57 (0.58)	0.02	575.95 (3, 799)	0.68

* $p < .05$, ** $p < .01$, *** $p < .001$.

ESOL recipients. Among students who received ESOL services prior to the summer, BELL attendees in Grade 3 had higher mean MAP-R scale scores than the comparison students (Table 2.19). However, for Grade 4 students who were ESOL recipients, non-attendees had a higher mean scale score on the MAP-R.

Table 2.19
Mean and Standard Deviation of MAP-R Scale Scores for
ESOL Recipients in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	277	170.6	12.2	300	169.2	12.1
Grade 4	283	180.1	12.0	449	180.8	14.0

The regression analysis confirmed a positive relationship between BELL attendance and reading skills for ESOL recipients in Grade 3. The relationship was statistically significant ($\beta = .07$, $p < .05$) but not practically significant ($\beta < .10$) (Table 2.20). For Grade 4, however, there was no significant relationship, meaning that reading achievement did not differ between BELL attendees and non-attendees among ESOL recipients.

Table 2.20
The Relationship between BELL Attendance and MAP-R Scale Scores for
ESOL Recipients in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 ($N = 577$)	1.72 (0.79)	0.07*	94.9 (4, 572)	0.40
Grade 4 ($N = 732$)	0.42 (0.61)	0.02	289.9 (5, 726)	0.66

* $p < .05$, ** $p < .01$, *** $p < .001$.

FARMS recipients. Among students who received FARMS, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-R in the fall after the BELL program, than the comparison students (Table 2.21).

Table 2.21
Mean and Standard Deviation of MAP-R Scale Scores for
FARMS recipients in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	332	172.0	12.7	355	169.8	13.0
Grade 4	372	184.0	13.6	607	183.7	14.6

The regression analysis confirmed a positive relationship between BELL attendance and reading skills only for FARMS recipients who were in Grade 3. The relationship was statistically significant ($\beta = .08$, $p < .01$) but not practically significant ($\beta < .10$) (Table 2.22). For Grade 4, however, there was no significant relationship, meaning that reading achievement did not differ between BELL attendees and non-attendees among FARMS recipients.

Table 2.22
The Relationship between BELL Attendance and MAP-R Scale Scores for FARMS Recipients in Grades 3 and 4

	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 ($N = 687$)	2.07 (0.76)	0.08**	116.9 (4, 682)	0.40
Grade 4 ($N = 979$)	0.06 (0.53)	0.00	519.8 (4, 974)	0.68

* $p < .05$, ** $p < .01$, *** $p < .001$.

Special education recipients. Among students who received special education services prior to the summer, BELL attendees in both Grades 3 and 4 had a higher mean scale score on the MAP-R in the fall after the BELL program, than the comparison students (Table 2.23).

Table 2.23
Mean and Standard Deviation of MAP-R Scale Scores for Special Education Recipients in Grades 3 and 4 by Attendance at BELL

	Attendees			Non-attendees		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Grade 3	58	164.4	11.5	69	160.7	12.3
Grade 4	93	173.9	13.4	126	170.8	14.6

However, the regression analysis did not indicate a significant (statistically or practically) relationship between attending BELL and reading achievement for special education recipients, in either Grade 3 or Grade 4 ($\beta < .10$, $p > .05$) (Table 2.24).

Table 2.24
The Relationship between BELL Attendance and MAP-R Scale Scores for Special Education Recipients in Grades 3 and 4

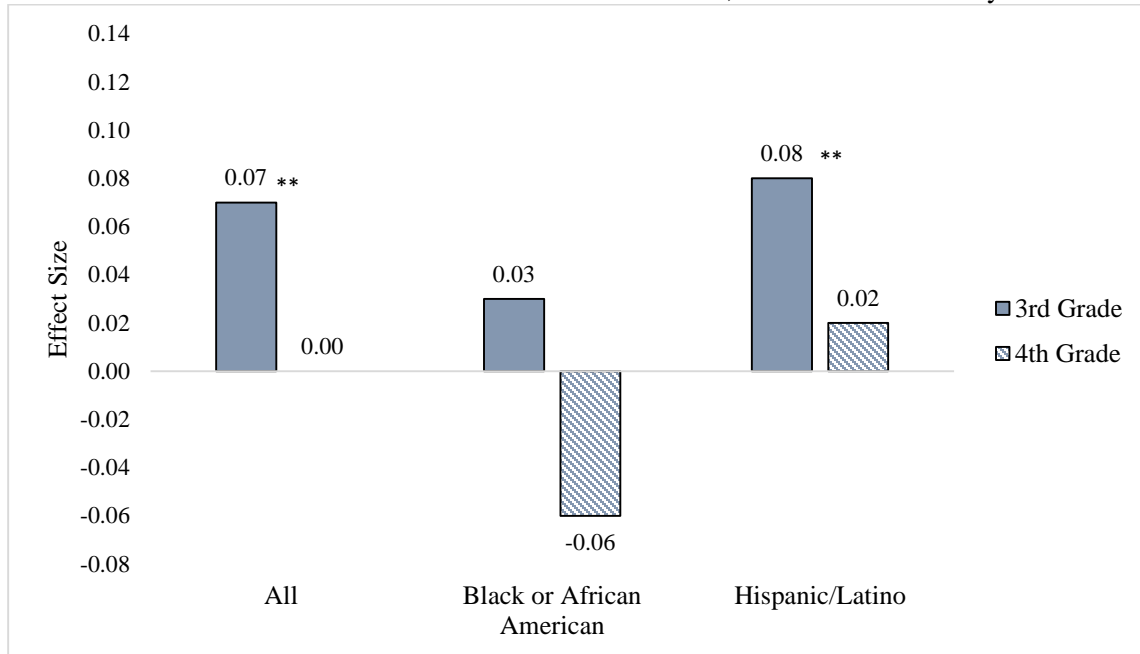
	Attendance at BELL: B (SE)	Attendance at BELL: β	Model fit: F (df)	Model fit: adjusted R^2
Grade 3 ($N = 127$)	1.37 (1.43)	0.06	82.8 (2, 124)	0.57
Grade 4 ($N = 219$)	-0.01 (1.11)	0.00	228.3 (2, 216)	0.68

* $p < .05$, ** $p < .01$, *** $p < .001$.

Summary. There was some evidence for a positive impact of the BELL program on reading skills for attendees in Grade 3, but no evidence for attendees in Grade 4 (Figures 4 and 5). For third graders, the relationship between attendance and reading skills was statistically significant among all students and among three subgroups: Hispanic/Latino, ESOL recipients, and FARMS recipients. However, none of these differences between attendees and non-attendees in Grade 3 was practically significant. For each group of fourth graders tested, the regression analysis did not indicate a significant (statistically or practically) relationship between attending BELL and reading achievement.

Figure 4

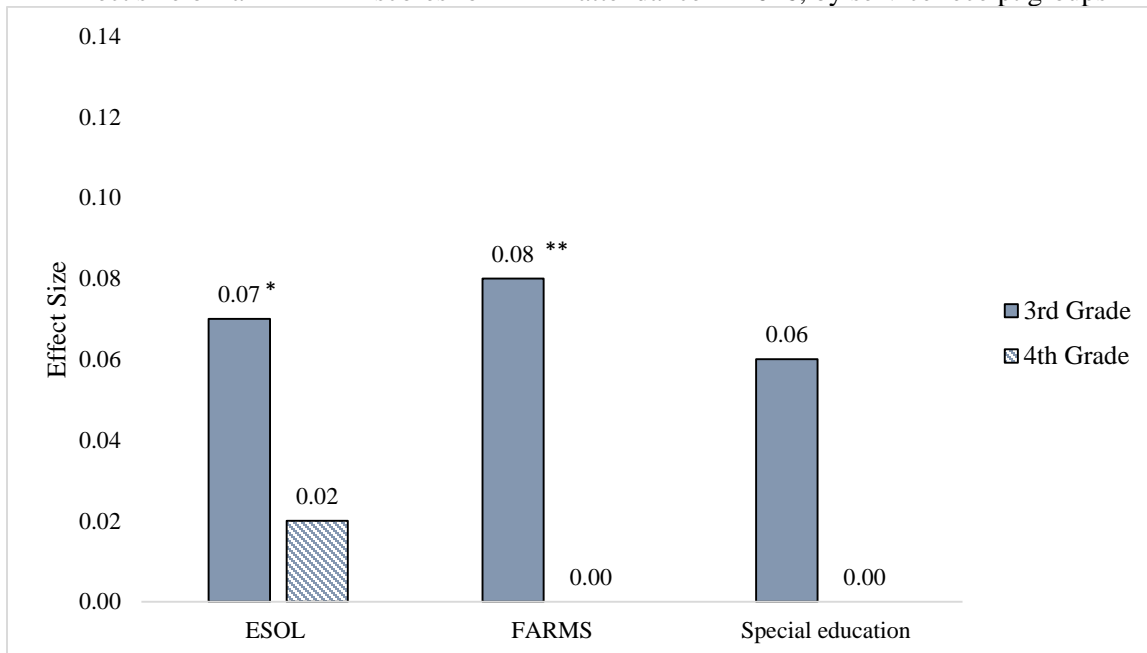
Effect size of fall MAP-R scores for BELL attendance in 2016, for all students and by race/ethnicity



Note. The number of students included in each analysis is in Tables 2.14, 2.16, and 2.18 above.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 5

Effect size of fall MAP-M scores for BELL attendance in 2016, by service receipt groups



Note. The number of students included in each analysis is in Tables 2.20, 2.22 and 2.24.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

Findings for Question 4: Did the impact of the BELL program vary by assessment types (MAP vs. STAR) in mathematics or reading, for all students or for student subgroups?

As noted above, BELL attendees completed STAR assessments (administered by the BELL program) at the start and end of the program. The BELL program used changes between the two sets of scores to evaluate the program's impact on students' reading and math skills. Because attendees took both MAP and STAR tests, there was an interest in understanding whether the impact of the BELL program varied between the two types of assessments.

However, it was not possible to examine the impact of BELL on STAR scores because only attendees completed the STAR tests. Thus there was no comparison group to understand what achievement might have been in the absence of the intervention. Therefore, the evaluators were not able to repeat the regression analyses, as was done above with MAP scores for evaluation questions 2 and 3, with STAR scores.

Instead, this section presents results on whether changes in attendees' achievements over time were the same for the two tests. For MAP, the change was between spring 2016, prior to the BELL program, and fall 2016, after the program. For STAR, the change was between the first and the last week of the BELL program. Compared to the MAP tests, STAR tests are closer in time to the program, more focused in content, and shorter. While all attendees completed STAR tests during the same weeks, the testing period for MAP was 10 weeks in the spring and 8 weeks in the fall.

Effect sizes from bivariate analyses were used to compare the changes in students' scores on the two assessment types. The bivariate analyses were paired t-tests. The effect size measure was Cohen's d. Cohen (1988) suggests the following guidelines to interpret the magnitude of d: .20, .50, and .80 corresponding to small, medium, and large effect sizes, respectively. The effect size index is scale invariant or metric-free and thus appropriate for comparing two different tests (i.e., MAP vs. STAR). The results for each subject area include only those attendees who had BELL and STAR scores from both times.

Mathematics. Among third grade attendees, each effect size for STAR was positive, reflecting that students had higher mean STAR scores in mathematics at the end of the BELL program than at the start (Table 2.25).

Table 2.25
Mean Changes in Scale Scores and Effect Sizes in Mathematics
for Third Graders by Assessment Type

	STAR		MAP-M	
	Mean change	Effect size	Mean change	Effect size
All students (N = 368)	14.57	.19	-2.61	-.24
Race/ethnicity				
Black or African American (n = 91)	13.71	.18	-4.74	-.42
Hispanic/Latino (n = 254)	16.39	.23	-2.00	-.19
Receipt of services during school year				
ESOL (n = 277)	13.79	.19	-2.08	-.19
FARMS (n = 331)	15.15	.20	-2.51	-.23
Special education (n = 58)	23.47	.25	-0.41	-.03

By contrast, each effect size for MAP-M was negative, because students had lower mean MAP-M scores in the fall after the BELL program than the spring before, as indicated by a negative mean change (Table 2.25). Thus, for each student group, the difference between effect sizes (i.e., MAP and STAR) indicated that the changes in attendees' achievement over time were not the same for the two tests. The MAP results suggest slight learning loss from spring to fall and the STAR results suggest immediate learning gains after attending BELL.

For mathematics scores among fourth grade attendees, each effect size for STAR was positive (Table 2.26). The MAP-M effect sizes were close to zero. Thus, the effect sizes for the two assessments did vary; those for STAR were larger, suggesting immediate gains in mathematics after attending BELL, than those for MAP-M that suggest no change from spring to fall.

Table 2.26
Mean Changes in Scale Scores and Effect Sizes in Mathematics for Fourth Graders
by Assessment Type

Student group	STAR		MAP-M	
	Mean change	Effect size	Mean change	Effect size
All (N = 406)	15.78	0.19	0.03	0.00
Race/ethnicity				
Black or African American (n = 101)	11.16	0.14	-0.31	-0.03
Hispanic/Latino (n = 288)	17.46	0.22	0.22	0.02
Receipt of services during school year				
ESOL (n = 273)	16.60	0.20	0.37	0.04
FARMS (n = 355)	15.58	0.20	0.04	0.00
Special education (n = 85)	12.87	0.16	-0.26	-0.03

Reading. There are no reading results for Grade 3, because these students did not take MAP-R in the spring prior to the BELL program.

For reading scores among fourth grade attendees, each effect size for STAR was at least a little larger than the MAP-R effect size for the same student group (Table 2.27). Although the effect sizes are similar between the two tests, those for STAR suggest more gains in reading than those for MAP-R.

Table 2.27
Mean Changes in Scale Scores and Effect Sizes in Reading for Fourth Graders
by Assessment Type

	STAR		MAP-R	
	Mean change	Effect size	Mean change	Effect size
All students (N = 394)	13.99	0.14	0.81	0.06
Race/ethnicity				
Black or African American (n = 99)	11.25	0.10	-0.81	-0.06
Hispanic/Latino (n = 278)	15.12	0.15	1.32	0.11
Receipt of services during school year				
ESOL (n = 263)	14.70	0.16	1.39	0.11
FARMS (n = 345)	13.27	0.13	0.88	0.07
Special education (n = 87)	11.69	0.14	0.99	0.08

Summary. The above analyses indicated that changes in attendees' achievements over time differed between the two tests, MAP and STAR, for all areas analyzed: Grade 3 mathematics, Grade 4 mathematics, and Grade 4 reading. The STAR results consistently suggest immediate gains from the beginning to the end of BELL, while the MAP results for changes from spring to fall suggest slight declines in Grade 3 mathematics, no change in Grade 4 mathematics, and slight gains in Grade 4 reading. However, these bivariate analyses did not address the impact of the BELL program on MAP or on STAR scores, because they were for attendees only.

Conclusion and Recommendations

The most accurate sense of the BELL program's impact on students' academic performance came from the multiple regression analyses using MAP scores. They provided evidence of a positive impact of attendance at the BELL program on students' performance in Grade 3 mathematics, Grade 4 mathematics, and Grade 3 reading. The multiple regression analyses provide a more accurate sense of program impact than the bivariate analyses of STAR or MAP scores because 1) the regression employs a comparison group, so there is a sense of how students performed in the absence of BELL and 2) MAP tests cover a wider set of skills and more closely align with the MCPS curriculum than STAR tests.

The findings on implementation and outcomes suggest the following recommendations:

- Continue the BELL program, given its positive impact on students' performance in Grade 3 mathematics, Grade 4 mathematics, and Grade 3 reading for all students, along with three subgroups: Hispanic/Latino, ESOL recipients, and FARMS recipients.
- Examine how to improve the program so it has a stronger impact on Black or African American students.
- Work with BELL to maximize the value of its training for staff through the following:
 - Ensure that all materials are in hand at the start of the training.
 - Provide more time on site before the start of the program, so that program staff have more time to work with the teachers.
 - Provide more training time to cover all the information provided, perhaps by starting the training sessions earlier in May.
- Improve coordination and communication between MCPS and BELL to achieve the following by the start of the program:
 - Ensure that curriculum materials match the level of the attendees.
 - Provide student information on needs for ESOL or special education services plus students' medical records and eligibility for weekend food bags.
 - Provide clear information on bus schedules and bus stops to site staff and parents.
- Consider providing extra support with the following:
 - Add a specialist who can support teachers with the instruction of students with disabilities.
 - Provide technology support when BELL staff set up their equipment.
- Revisit the schedule for providing a nurse or health technician to each site on every day that students are onsite.

Acknowledgments

The evaluators thank Dr. Cara Jackson, evaluation support specialist, Program Evaluation Unit (PEU) and Mrs. Natalie Wolanin, logistics support specialist, PEU, for analysis, assistance with figures and tables, and helpful suggestions on an earlier draft of this report.

The authors also appreciate assistance in acquiring information and data from BELL and helpful suggestions on earlier drafts of this report provided by Mrs. Deann M. Collins, director, Division of Title I and Early Childhood Programs and Services and Mrs. Nichelle Owens-Jones, supervisor, Division of Title I and Early Childhood Programs and Services. We are also grateful to the site staff at each BELL site for sharing their experiences and perceptions.

Lastly, the authors thank Dr. Shahpar Modarresi, supervisor, PEU, for her guidance and support throughout this study.

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Appendix A
2016 BELL Summer Learning Program Sites

Arcola Elementary School

Bel Pre Elementary School

Clopper Mill Elementary School

Cresthaven Elementary School


Sargent Shriver Elementary School

Summit Hall Elementary School

Watkins Mill Elementary School

Weller Road Elementary School

Appendix B Bell Summer Learning Program Application

	MONTGOMERY COUNTY PUBLIC SCHOOLS Scholar Application Form SUMMER 2016	For Office Use Only Scholar Name (LAST, FIRST): Site: Grade:		
THANK YOU for investing in your child's success. Please fill in ALL information below to apply to BELL. We look forward to working with your child this summer.				
BELL Summer Site: _____				
Please write the name of the school your child is currently attending. <input type="checkbox"/> School Attending Now: _____				
CHILD'S INFORMATION				
Last Name, First Name:		Grade right now: (Circle one) 2 3		
Date of Birth:	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	School Attending Now: Student ID:		
Ethnicity (Pls. check one)	<input type="checkbox"/> Multi-Racial <input type="checkbox"/> Black/African American <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> White <input type="checkbox"/> American Indian <input type="checkbox"/> Pacific Islander/ Native Hawaiian <input type="checkbox"/> Asian Other: _____			
Home Address of Child:				
Street:		Apt:		
City:	State:	Zip Code:		
Does this child qualify for free or reduced lunch through the school? <input type="checkbox"/> No <input type="checkbox"/> Yes • If yes, please check which one: <input type="checkbox"/> free lunch <input type="checkbox"/> reduced lunch • Does your child have an IEP? <input type="checkbox"/> Yes <input type="checkbox"/> No • Is your child in an English Language Learner Program? <input type="checkbox"/> Yes <input type="checkbox"/> No				
PARENT/GUARDIAN INFORMATION				
The parent(s)/guardian(s)/individuals listed below can be contacted in case of emergency.				
Parent/Guardian 1:		Parent/Guardian 2:		
Last, First:		Last, First:		
Relationship to Child:		Relationship to Child:		
Home Phone:		Home Phone:		
Cell/Other Phone:		Cell/Other Phone:		
Email Address:		Email Address:		
Allowed to pick up? Yes <input type="checkbox"/> No <input type="checkbox"/>		Allowed to pick up? Yes <input type="checkbox"/> No <input type="checkbox"/>		
EMERGENCY CONTACT INFORMATION				
Emergency Contact Last, First	Relationship to Child	Home Phone	Cell/Other Phone	Allowed to pick up?
1.				Yes No
2.				Yes No
CHILD'S TRANSPORTATION PLAN				
The transportation plan outlined below will be maintained in my child's file and is valid for the duration of the BELL program. Any changes in the transportation plan must be stated in writing and given to BELL. Otherwise, the transportation plan below will be implemented.				
My child will ARRIVE to the program by (check one):			My child will DEPART from the program by (check one):	
<input type="checkbox"/> MCPS School bus			<input type="checkbox"/> MCPS School bus	
<input type="checkbox"/> Unsupervised walk to BELL			<input type="checkbox"/> Unsupervised walk from BELL	
<input type="checkbox"/> Authorized drop-off to BELL			<input type="checkbox"/> Authorized pick-up from BELL	
<input type="checkbox"/> Local bus or transit or car service			<input type="checkbox"/> Local bus or transit or car service	
<input type="checkbox"/> Other :			<input type="checkbox"/> Other :	

Child's Last Name:		Child's First Name:	
CHILD'S MEDICAL INFORMATION			
Is your child on any medication?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name of Medication(s) taken at home	Side Effects
Are medications to be taken at BELL?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name of Medication(s) taken at BELL	Side Effects
If medications are taken during the program times, please complete the Medication Consent Form. (SEPARATE FORM)			
List below any special limitations or concerns your child may have, such as dietary restrictions, allergies (including the reaction and treatment required should your child become exposed to the allergen), or chronic health conditions. <input type="checkbox"/> Allergies/Diet Restrictions (pls. specify) _____			
<input type="checkbox"/> NONE (please check if valid)			
Consent and Release Statement			
<ul style="list-style-type: none"> • I hereby give the staff in the BELL Program permission to administer basic first aid and/or CPR to my child and/or take my child to a hospital and to secure medical treatment when I cannot be reached or when delay would be dangerous to my child's health. • I certify my understanding that I have access to the BELL Family Handbook and will receive a copy the first week of program. Upon enrollment of my child in the program, I agree to abide by the policies and procedures described therein. • I give BELL permission to access and keep copies of my child's academic record, including report cards, IEP's, standardized test scores and cumulative records. BELL will keep these data confidential and use them only for analysis and program planning. I further understand that BELL may share records of my child's participation in BELL programs, attendance and performance in the program and demographic data with sponsoring organizations such as the local school district, BELL program funders or a network of program providers for purposes of analysis and for special programs. • I give BELL permission to contact me (using telephone, email, mail, SMS text message or robo-call via telephone) using the contact information above about the status of enrollment, my child's attendance, upcoming BELL events and programs, schedule changes and program updates. • I certify my understanding that BELL reserves the right to reject the application of any scholar whose needs BELL determines cannot be adequately met by the resources or structure of the program • I certify my understanding that I will be given a Field Trip Permission Form to authorize my child's participation in any field trip or other off-site activity planned by the program and that alternate care will not be provided should I choose not to grant such permission for my child's participation. Additionally, I acknowledge that my child's participation in Field Trips is at the discretion of the program staff. • I release BELL as an organization, as well as its employees and volunteers, from any liability suit or claim for property damage or loss, or personal injury to my child. • I give permission for my child to be included in the documentation/promotion of BELL, including photographs, audio/visual/video recordings, and reproductions of academic work, participation in surveys, and written quotations or descriptions of activities. I also understand that resulting materials may be exhibited before the community, fundraising, or other groups and individuals or included in media articles. • I certify that the above information is correct to the best of my knowledge and agree to the consent language above. 			
Parent/Guardian Signature	X	Date	X

=====
 PLEASE RETURN YOUR COMPLETED FORM TO:
THE MAIN OFFICE AT YOUR CURRENT SCHOOL
BELL WILL NOTIFY FAMILIES BEGINNING MAY 2ND TO CONFIRM YOUR CHILD'S ENROLLMENT.
 THANK YOU FOR CHOOSING BELL!
 BELL PHONE NUMBER: 410-338-1318