Chesapeake Multicultural Resource Center (ChesMRC)
Afterschool Initiative: 2015 Interim Evaluation

A 21st Century Learning Center Grant (MSDE #144796)

by
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Executive Summary

Overview of Program

The Hispanic population was growing at a quicker rate in Talbot County than the rest of Maryland, and no programs had been designed to improve the educational level of the immigrant Hispanic families. Almost all Hispanic students at Easton Elementary School lived in low income families, and one-fifth of them failed to score at a proficient level in reading and mathematics. The Chesapeake Multicultural Resource Center initiated an afterschool program in September of 2012, and was awarded a five-year 21st Century Community Learning Center grant by the Maryland State Department of Education beginning in school year 2013-2014. This report summarizes and evaluates the second year of the grant program.

Student Characteristics

The FY2015 afterschool program involved 140 students for at least one day, including 77 returning from the previous year (78% of those returning to the school), 35 first graders, and 28 first-time students in grades 2-5. As in the previous year, more than half were girls, half were in grades 1-2. Four-fifths were Hispanic and three-fourths received English Language Learner services. Almost all were from low income families and received Free and Reduced Price Meal services. They represented 113 families, two-thirds of whom include both the mother and father.

Program Processes

The program had an average enrollment of 107 students, up from 101 the prior year: most of the higher enrollment was in the spring. Attendance was much more variable in FY2015 than FY2014, although about three-fourths of the enrolled students in both years attended on a given day. The afterschool program met for 99 days in FY2014 and 102 days in FY2015. The 198 students participating in at least one year attended an average of 83 days during the two years, with 10% attending less than 30 days and 7% attending 180 days or more. (See chart.) The FY2015 program
divided students into eight groups based on school grade and reading ability. Students in Group 1 (mostly low reading first graders) and Group 8 (high reading third, fourth and fifth graders) attended more frequently than students in other groups. (See Figure.)

Parent Involvement

Parents in 69% of the families were involved in one of the afterschool scouting programs or in the resource center. Parental involvement encouraged their students to attend afterschool on more days. Three-fourths of the mothers had beginner or intermediate levels of English. Half of them took ESL classes, about double the proportion in the previous year. All of them who took 15 or more hours of classes advanced one or two levels. A mother’s level of English and participation in ESL classes did not directly affect students’ afterschool attendance or classroom grades, but was associated with greater participation in scouts and the resource center.

Academic Outcomes

The afterschool program appeared to help students academically and this is cumulative over two years. Since the PARCC used to replace the MSA is not available, this evaluation analyzed benchmark scores and final grades in reading and math. Final reading and math grades tended to increase with the number of days the students attended the afterschool program over the two years. (See chart.) Controlling for year in school and gender, every day that students attended the afterschool program during the first two years of the grant program resulted in a linear increase in their FY2015 reading and math final grades of 0.02 or 0.03 points, and an even greater increase for students in the first grade in FY2015. Similar results are found in analyzing FY2015 attendance only and in changes in the FY2015 benchmark scores.
Recommendations

Recommendation 1. Identify reasons why students in Groups 1 and 8 attended the afterschool program more days than students in the other groups, and try to extend these reasons to all groups.

Recommendation 2. Identify reasons why some students returning to the elementary school do not return to the afterschool program.

Recommendation 3. Obtain the 2015 PARCC reading and math scores for the students who participated in the FY2014 and FY2015 afterschool programs to verify the findings from grades.

Recommendation 4. Make arrangements now for how the PARCC scores can be obtained in future years for all afterschool participants, and especially those who move into middle school or transfer to other Maryland public schools.
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Program Overview

Background

Talbot County, Maryland, has a Hispanic population that is growing faster than in the rest of Maryland. Studies have shown that immigrant children who are not engaged academically by the third grade have a high probability of dropping out of high school and engaging in risky behavior. Low income is also a risk factor in academic achievement. Easton Elementary School (EES) has both a large Hispanic enrollment and low income families. While half of all students at the school are registered in the Free and Reduced Meal (FARM) program, almost all of the Hispanic students receive FARM. In 2012, one-fifth of the Hispanic students failed to score at a proficient level in reading and mathematics, and half failed to score at a proficient level in science. No programs had been designed to provide extra academic help to Hispanic students at EES or to engage their immigrant families in ways to assist their children. The Chesapeake Multicultural Resource Center (ChesMRC) provides services to Hispanic families and initiated an afterschool program in September of 2012. It received a five-year 21st Century Community Learning Center (21st CCLC) grant by the Maryland State Department of Education (MSDE) to expand this program beginning in school years 2013-2014 (FY2014). This report documents and evaluates the second year of the grant program (FY2015) with some comparisons to the first year (FY2014).

The ChesMRC contracted with Bonham Research to evaluate its afterschool program. Bonham Research has been the independent evaluator for the Caroline County Lifelong Learning Partnerships 21st Century Community Learning Center grants since FY2006, the afterschool program of the Baltimore County Local Management Board (FY2001-2005), the English Language Learners (ELL) program of the Baltimore County Public Schools (FY2005), the improvements in the Baltimore City Public School System (FY2008), and the Baltimore County Public Schools’ master plan implementation (FY2008). Dr. Gordon Scott Bonham, the evaluator, earned his Ph.D. in sociology from the University of Michigan (Ann Arbor) in 1971, and has conducted applied health and social research and evaluation with the National Center for Health Statistics, the University of Louisville, and Towson University before establishing Bonham Research.

Matthew R. Peters, the director of ChesMRC, provides the overall coordination of the afterschool and parent programs and is the administrative link between ChesMRC and Bonham Research. Janice Johnston is the Afterschool Site Coordinator with overall responsibilities. Assisting her is Carolyn Johnson, the Academic Coordinator who is on the staff of the Talbot County Public Schools and who provided the academic data. Melissa Meyers maintains the database for the program and provided the data files used in this evaluation and also answered questions about them.

The ChesMRC incorporated research-proven aspects of other programs to develop a program to effectively reach out to the immigrant community and integrate them into a successful and productive afterschool program. These include being culturally sensitive, being aware of
personal and family responsibilities, subsidizing the cost of participation, addressing language and communication barriers, and gaining the trust of parents. Additional academic assistance has been shown to improve reading scores for children of immigrants since school ELL programs often substitute English instruction for standard curriculum content. Additionally, the ChesMRC afterschool program involves parents in the educational process—parents who have low English skills, have completed an average of four years of schooling in their countries of origin, and who might be illiterate in their native language.

Goals and Objectives

The ChesMRC afterschool program at EES had two goals for educational improvement, one for students and one for parents. The student goal specified the desired academic performance at the end of the five-year 21st CCLC grant, with objectives specified for each of the first four years. Some benchmarks were also identified that should indicate progress toward reaching each year’s objectives.

Student Goal: By June 2018 70% of program’s first cohort, students that have participated for 5 consecutive years in the 21st CCLC program, who started at a Basic level will score Proficient/Advanced on the 5th grade reading and math assessments (MSA or PARCC) and 60% will score at Proficient or Advanced in the 5th grade science assessment. And 95% of the program’s first cohort that started at Proficient/Advanced will remain at this level.

Student Objective 1--By June of 2014, 30% of the students that have participated in the 21st CCLC program and began at a Basic level will score at Proficient/Advanced on the reading and math MSA.

Student Objective 2--By June of 2015, 40% of the students that have participated in the 21st CCLC program and began at a Basic level will score at Proficient/Advanced on the reading and math PARCC.

Student Objective 3--By June of 2016, 50% of the students that have participated in the 21st CCLC program and began at a Basic level will score at Proficient/Advanced on the reading and math PARCC.

Student Objective 4--By June of 2017, 60% of the students that have participated in the 21st CCLC program and began at a Basic level will score at Proficient/Advanced on the reading and math PARCC.

Student Benchmark 1--Individual Reading Inventory score improves over previous administration (Sept. & May).

Student Benchmark 2--Houghton-Mifflin Aligned Theme Test score in reading improves over previous administration (Oct. & Dec.)
Student Benchmark 3--Quarterly report card grades in reading show improvement in Jan., Mar. and June to a maximum of B or better in Reading, Math and Science.

Student Benchmark 4--Scores on teacher surveys improve over previous administration (Jan. & May).

Most of the parents (or adult caregivers) of students in the afterschool program did not have a good command of English which limited their abilities to help their children with schoolwork. The program’s goal for parents is improvement in their English skills by the end of the five-year grant, as well as attending sessions on how to help their children academically. The objectives for each year were essentially the same as the goal for the fifth year. Two benchmarks were specified that if met would be expected to result in meeting the year’s objective.

Parent Goal: For every year of participation in the afterschool program, the English Proficiency level determined by guidelines developed by the Adult Education Department of Chesapeake College will increase by ONE level for 50% of the parents that do not have a proficient or advanced level of English. And 100% of the parents complete the 20-session Parent Literacy program developed by ChesMRC and partner organizations.

Parent Objective 1--By October 2013, 50% of parents at a basic level of English are enrolled into free, ESL classes provided by Chesapeake College or participating in ESL activities at the ChesMRC center.

Parent Objective 2--By September 2014, 50% of parents at a basic level of English are enrolled into free, ESL classes provided by Chesapeake College or participating in ESL activities at the ChesMRC center.

Parent Objective 3--By August 2015, 50% of parents at a basic level of English are enrolled into free, ESL classes provided by Chesapeake College or participating in ESL activities at the ChesMRC center.

Parent Benchmark 1--By September of each year, 100% of the parents sign commitments to participate in some form of adult education during the school year (i.e., ESL classes or training, participating in our Adult Literacy program, or choosing another adult educational program).

Parent Benchmark 2--By June of each year, parents have participated in at least 75% of the educational programming offered by ChesMRC, Chesapeake College, or another agency.

Program Plan and Expectations

The plan for the students’ afterschool program involves two hours of math instruction and two hours of reading/language instruction per week. Certified teachers mainly from within EES
implement several evidence-based curricula with the help of a dedicated group of community volunteers and staff from ChesMRC. The math curricula uses *Moving with Math*’s extension series which has students use manipulatives in every lesson to develop conceptual understanding and improve achievement. The reading/language component will consist of project-based learning built on Common Core Standards and *ARC* (American Reading Company) *Research Labs*. The reading curriculum’s focus will be on STEM (Science, Technology, Engineering, and Math) themes in earth, physical, and life sciences. The academic instruction period will be linked to an enrichment component using hands-on extensions from the *ARC Research Lab* as well as including educational materials from *Delta Education Science Module*, which are all correlated with the Common Core standards for the State of Maryland. Volunteers from a partnership with the 4H will provide hands on activities including nutrition and health, coupled with engineering using Lego Robotics. Additional reading enrichment will be provided by Junior Achievement, which will help students develop financial literacy as well as important social skills. The ChesMRC afterschool program will also host a number of activities to help students develop important social skills. It will promote and assist students and families to enroll in additional youth development programs, such as the YMCA, the Boy Scouts of America, the Girl Scouts of America, 4H Club, Talbot Mentors, sports teams, music programs, and art programs. All of these programs along with Character Counts will promote self-confidence and character development in the students.

The afterschool program is planned to operate for 109 days from mid-September to the Memorial Day holiday. It takes place Monday-Thursday at the EES Dobson building from the end of the school day at 3:45pm until 6:15pm. Group size for the instruction period is limited to 15 students for each certified teacher who is assisted by an enrichment program leader, volunteers, and ChesMRC staff. The program schedule concludes with 15 minutes of guided homework completion. Parents are required to pick up their children after the homework time so students and staff can show the parents completed homework tasks and explain the remaining assignments to be finished at home with parental guidance. This provides opportunity for program staff to inform parents about their children’s progress overall and about important school and community information.

The parents of students participating in the ChesMRC afterschool program will be required to commit to their own educational development. Parents can opt to enroll in free ESL classes (English as a Second Language), GED classes provided by Chesapeake College, adult literacy or academic development program provided by other social service providers, or work independently at the ChesMRC Resource Center with the *Skills Tutor* program. ChesMRC staff will use the *Parenting for Academic Success* curriculum that covers a diverse array of topics designed for parents who are nonnative speakers of English, which will increase their abilities to support the language and literacy development of their children. Parents are also required to volunteer at least one hour per month to help at the afterschool program.

Partnering with the ChesMRC are Easton Elementary School, Talbot County Public Schools, Chesapeake College, Salisbury University, Talbot County Judy Center, Talbot Partnership, Boy Scouts of America, University of Maryland Extension, Junior Achievement of Delmarva,
Character Counts Mid-Shore, Talbot Family Network, Talbot Department of Health, and Maryland Food Bank.

**Evaluation Data and Methods**

The evaluation measures whether the program met its specific goals, objectives and benchmarks. In addition, the discussion addresses broader questions about the value of the program using all available data, not just the data that specifically relate to the goals and objectives. The following measures and tests were used for the evaluation:

Student characteristics:
- Gender;
- Grade level;
- Race and ethnicity: African American, Asian, Hispanic, white non-Hispanic;
- FARM (Free and Reduced-price Meals) program;
- ELL (English Language Learner) services;
- Special Education services.

**Student academic proficiency:**
- Science MSA (Maryland School Assessment) scale scores proficiency level for students in grade 5 in FY2015: basic (<391), proficient (391-466), and advance (467+);
- Reading and math PARCC scores were not available for students in grades 3-5;
- Reading/language arts final report card scores (50 to 100) in FY2014 and FY2015 for all students attending the afterschool program in either year who were at Easton Elementary School in FY2015. Scores were assigned for FY2014 designations of Beginning (score of 55), Developing (65) and Secure (75) for grades 1-2, and the scores for grades 3-5 qualified by “modifications” were treated the same as those without the qualification;
- Rigby Informal Reading Inventories (IRI) and math benchmarks in October and May are used to identify progress during the year for all students.

**English skills of parents:**
- ESL (English as a Second Language) test levels.

**Student afterschool participation:**
- Number of days attended for calculation of means, correlations and regressions;
- Regular attendance defined by MSDE as 30 days or more per year;
- Five categories of days attended during one year for tabulations: 0, 1-29, 30-59, 60-89, and 90-101
- Eight categories of days attended during the two academic years for tabulations: 0, 1-29, 30-59, 60-89, 90-119, 120-149, 150-179, 180-200.

**Adult participation:**
- Number of hours the mother and the number of hours the father attended ESL classes;
- Involvement by a parent in Boy Scouts, Girl Scouts or Resource Center activities.
Statistical procedures and test

- Statistical processing and testing used GNU PSPP (statistical analysis software). Two-tailed tests of significance are used when the direction of relationships (positive or negative) are not assumed. For the hypothesis that attendance increases academic performance, a one-tail test is used;
- Cross-tabulations with chi-square to test for statistical significance at a 5% probability of error ($p=.05$);
- Comparison of means with ANOVA to test for statistical significance at a 5% probability of error ($p=.05$);
- Pearson correlation to test for statistical significance between two interval, or ordinal scales assumed to have interval-like properties, with a 5% probability of error ($p=.05$);
- Multiple regression to test for independent contribution of interval (or dichotomous) variables to an interval dependent variable, using F-statistic for significance of the overall model and t-statistic for significance of individual variables. $P=.05$ was used for inclusion, generally using a one-tail test that assumes a positive relationship.
Findings

Student Enrollment

The ChesMRC afterschool program enrolled 140 students during FY2015 who attended at least once, with 77 in the program for the second year. (See Figure 1.) An additional 58 students attended the afterschool program only in the previous year, for a total of 198 students who attended at some time during the two years of the grant program. Over one-third (35) of those who attended only in FY2014 were not eligible for the program in FY2015 because they no longer attended Easton Elementary School. Thus, of the 114 students who attended in FY2014 and were eligible for the FY2015 program, 78% returned for a second year in the program.

Girls outnumbered boys among those who had ever attended (57% to 43%), with little difference between the two years. However, girls who participated in FY2014 and returned to EES in FY2015 were more likely than boys to return to the afterschool program (84% vs 67%).

The FY2015 grade in school is

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<th>FY14 Only</th>
<th>FY15 Only</th>
<th>FY14 Both</th>
<th>FY15 All</th>
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<td>97%</td>
<td>88%</td>
<td>98%</td>
<td>92%</td>
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a FY2014 grade for comparison purposes
b Either FY2014 or FY2015

Figure 1. Student characteristics by enrollment
only available for students at EES in FY2015. All FY2014 students not at EES in FY2015 were assumed to have advanced one grade since FY2014. More students in both years were in first grade, although the concentration was less in FY2015 than in FY2014 (25% vs. 31%). Fifth graders were a smaller part of the afterschool students in FY2015 than in FY2014 (11% vs. 16%). The 16% of the FY2014 students in fifth grade could not be part of the FY2015 afterschool program since they had ascended to middle school, and they are 36% of those who only participated in the afterschool program during FY2014. Of the 42 first grade students in FY2014, returned to EES in FY2015 and 28 returned to the afterschool program in FY2015 (67% overall, 70% of those who could participate in FY2015). About the same percent (69%) of FY2014 second graders who could participate as in the afterschool program as third graders did so, Almost all FY2014 fourth and fifth grade students who could participate in the FY2015 afterschool program did so (95% and 92%). However, two of these first grade students did not return to EES, so 82% of the FY2014 first grade students who could participate in FY2015 did so. This was greater than for students in grades two through four (67%-69%). However, only FY2014 first grade students have the possibility of being in the afterschool program during all five years of the grant. If they return to EES and the afterschool program at the same rate as the older students, 17 students will have participated in the afterschool program for all five years of their elementary school experience.

About 10% of the participating students were African American, 80% were Hispanic, and the remainders were Asian, non-Hispanic white, or students with other racial identification. Almost all (94%) of the students overall received free and reduced price means (FaRMS), 76% received English language learner (ELL) services and 9% received special education (SPED) services from the school. This varied little by year, Race, FaRMS, ELL and SPED had little relation with whether returning EES students returned to the afterschool program.

### Afterschool Groups

In FY2015, ChesMRC divided the students into eight groups, using a combination of the year in school and reading ability. All 42 first and second grade students at the beginning level of reading were divided between Group 1 and Group 2. (See Figure 2 for the reading benchmark and the number of

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<td></td>
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<td>11.8 (10)</td>
<td>4.8 (5)</td>
<td>21.0 (2)</td>
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<tr>
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<td></td>
<td></td>
<td>19.9 (13)</td>
<td>16.0 (4)</td>
<td>26.0 (1)</td>
<td>19.3 (18)</td>
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<td>22.5 (2)</td>
<td>24.4 (10)</td>
<td>26.2 (5)</td>
<td>24.7 (17)</td>
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<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>27.3 (3)</td>
<td>27.6 (8)</td>
<td>31.1 (7)</td>
<td>28.9 (18)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.3 (35)</td>
<td>11.3 (33)</td>
<td>17.9 (28)</td>
<td>20.5 (27)</td>
<td>27.4 (15)</td>
<td>14.4 (138)</td>
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</table>

**Figure 2.** Average fall reading benchmark and number of students by grade and group
students.) Second graders further along in reading were divided into Group 3 and Group 4. Students in grades three, four and five were divided among the other four groups, with Group 5 including the poorest readers of each grade and Group 8 the best readers.

**Student Attendance**

The FY2015 afterschool program operated for 102 days between September 22, 2014 and May 21, 2015, during the second year of the grant. This was up from 99 days in FY2014. Although 143 students enrolled at some time during FY2015 (two never attended and one is missing much information), enrollment on any particular day varied from 101 to 117 with an average enrollment of 107 students. (See Figure 3.) Attendance averaged 82 students and varied between 62 on March 10 and 98 on May 13. The attendance averaged 77% of the enrollment on any given day throughout the year, but varied from a high of 84% in September and October to a low of 72% in January and February. The average for the first year of the program was also 82 students, and it varied less from month to month. The average enrollment in the first year was slightly lower (101 students) with 78% of the enrolled students attending on an average day.

*Figure 3. Daily enrollment and attendance, FY2014 and FY2015*

Students attended the afterschool program in FY2015 an average of 59 days, although two enrolled students never attended and one attended all 102 days. Students averaged one day more than in the previous year which had three fewer program days. However, students who had attended the afterschool program in the previous year attended an average of 77 days in FY2015 compared to 50 days for those first starting in FY2015. The average number of days students
attended the afterschool program differed by group. (See Figure 4.) Group 8 attended an average of 77 days, significantly more than the 51 days of Group 2, the 57 days of Group 3, the 56 days of Group 5, or the 41 days of Group 6. Group 1 and Group 4 attended significantly more days than Group 6, but not significantly different from the other groups. While groups were assigned based on grade level and academic ability at the beginning of the year, neither grade nor academic ability by itself had significant relationships to attendance. This suggests that other characteristics of the groups affected attendance. However, no other measured student characteristic had a significant relationship to afterschool attendance: gender, race, FaRMS, ELL, or SPED. In FY2014, by contrast, students enrolled in FaRMS and those receiving ELL services attended afterschool on more days than students not enrolled FaRMS or in ELL.

The MSDE does not count students who attend less than 30 days of an afterschool program as “regular attenders,” and one-fourth of the students attended 1-29 days in both years. (See Figure 5.) Students were more likely in FY2015 than in FY2014 to have attended 30-59 days and 90+ days, but less likely to have attended 60-89 days.

Although 31 students attended less than 30 days in FY2015, only 19 of them attended the afterschool program for less than 30 days when for both years is combined. (See Figure 6.) Students attended an average of 83 days over the two years. However, 60-89 days was still the most frequent number of days when two years are combined just as it was in each of the two years.
Parental Involvement

The 140 students in the FY2015 afterschool program came from 113 families. All but four (109) had mothers in the home and 79 had fathers in the home. (See Figure 7.) Two-thirds of the families (75) included both the mother and the father, 34 included the mother only, and 4 included the father only. The majority (80%) of the families had one student in the program, but 19% had two students, and two had three or four students in the program.

Four-fifths of the mothers had an assessment of English as a second language, and 62% of these had a low beginner level of English at the start of FY2015. An additional 12% were at the high beginner or intermediate levels. Only 12% had an advanced level of English. The average level was between the high beginner and low intermediate level. No mother was assessed as fluent in English in FY2015, but it is possible that some of those without information on their English skills were fluent, but they also could be at the low beginning level, or anywhere in between. Almost half (47%) took ESL classes and 29% gained at one or two levels, mostly from low beginning to high beginning. Among the 80 mothers at the beginner and intermediated levels, 53% took ESL classes and the 33% who participated in 15 or more hours gained a level of English.

The English level of only 13 fathers was reported at the beginning of the year, divided between high beginning and advanced. An additional six had their level reported at the end of the year: five at the high beginner and one at the advanced level. While 13 took between 10 and 60 hours of ESL classes during the year, nothing can be generalized on how these hours helped, as only one father had the beginning level, ending level and number of class hours recorded. Half of those with hours of classes reported had neither beginning nor ending level of English reported. In five families the fathers were the only one to take ESL classes. The other eight fathers took ESL classes along with the mothers, with three completing the same number of hours as the mothers and five completing fewer hours.

The parents of two-thirds (68%) of the 198 students involved in afterschool during the first two years had not taken any ESL classes. 5% had taken less than 15 hours of classes during only one year, 27% had taken 15 hours or more of the classes during one or both of the years.

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<th>Fathers</th>
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<tbody>
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</tr>
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</tr>
<tr>
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<td>75</td>
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<tr>
<td>No</td>
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<tr>
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<td>Advanced</td>
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<td>66</td>
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<tr>
<td>40-60</td>
<td>13</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 7. Number of parents by characteristics
One-fifth (19%) of the families had a parent involved in Cub Scout leadership, half (50%) had a parent involved in Girl Scout leadership, and one-fourth (26%) had a parent involved in the Resource Center. Together, two-thirds (69%) of the families contributed parental time regularly to the functions enhancing their students’ afterschool experiences. In terms of students, 40% of the boys had parents involved with the Cub Scout program, and 38% of the girls had parents involved with the Girl Scout program. Half (71) of the students had parents involved with the Resource Center, including 20 who were also involved in Cub Scouts and 12 who were also involved in Girl Scouts. Together, 66% of the students had parents leading or helping out with afterschool student activities. Mothers who participated in ESL classes during the first two years were more likely than other mothers to also be involved in scouts and the resource center.

It was anticipated that parental involvement in their own English development and in their children’s afterschool activities would help students in their academic work. Parental involvement in Cub Scouts, Girl Scouts, and the Resource Center had significant effects on their students’ afterschool attendance. (See Figure 8.) In addition to parent involvement, students in afterschool Group 1 and Group 8 attended more frequently than students in Groups 2-7. In this path model, the arrows show the hypothesized direction of influence, or causality, and the numbers on the arrows show the relative size of the statistically significant influences on the number of days students attended the afterschool program. The path model was derived from Equation 1, using the standardized coefficients for the relative importance of each arrows rather than the metric coefficients of the multiple regression equation which shows the influence in terms of actual days. The overall equation is statistically significant (F[5,133]=10.7, p<.001; R²=.29) and each of the coefficients is significantly different from zero (two-tail test), or for afterschool days, significantly greater than zero (one-tail test). Afterschool days is a continuous variable, but all of the variables to the right of the equation are dichotomous and take on the value of “1” if true and “0” otherwise.

Equation 1:  Afterschool days = 38.1 + 26.0 *Girl Scouts + 20.0*Cub Scouts 
+ 14.8*Resource Center +16.0*Group 1 + 18.2*Group 8.

Equation 1 is interpreted as students in Groups 2-7, whose parents were not involved in scouts or the Resource Center, attended the afterschool program an average of 38.1 days in FY2015. They attended 26.0 additional days, for an average of 64.1 days, if their parents were involved in Girl Scouts or 20.0 additional days, for an average of 58.1, days if their parents were involved with Cub Scouts (no parents were involved with both). Helping out in the Resource Center added another 14.8 days. Therefore, students whose parents were involved in scouting and the Resource Center attended afterschool an average of 72.9-78.9 days. If the students were in Group 1 or Group 8 they attended 16.0-18.2 more days. No other available characteristic of the students or parents had any statistical effect on afterschool attendance, including student gender,
race, year in school, enrollment in FaRMS, receiving ELL services, receiving SPED services, October IRI reading level, mother’s English ability, or hours mother attended ESL classes. This is different from FY2014 analysis which found that students whose parents attended ESL classes attended an average of 11 more days of the afterschool program than did students who did not have parents taking ESL classes.

**Student FY2015 Academic Outcomes**

In FY2014, Easton Elementary School, like most Maryland public schools, had some students who participated in the Maryland School Assessment (MSA) while other students participated in a field test of the Partnership for Assessment of Readiness for College and Careers (PARCC) as part of a consortium of 12 states plus the District of Columbia. While the 2014 MSA scores were available for most of the students involved in the FY2014 afterschool program for the evaluation report, 2015 PARCC scores were not available for analysis for this report. Therefore, comparable academic outcomes are limited to reading and math benchmark assessments taken by the students in October 2014 and May 2015, and to their FY2014 and FY2015 final class grades in reading and math. The school uses the Informal Rigby Reading Inventory (IRI) for the reading benchmarks with scores ranging from 0 to 33. The math benchmark has scores ranging from 0 to 100. Both of these benchmarks are assumed to be interval scales and are used in this analysis without any modification. The final class grades in both reading and math range from 50 to 100 for most students. This analysis assumes these are interval measures, although they may be grouped into five categories with 50-59 and 60-69 representing less than grade-level achievement, and 70-79, 80-89, and 90-100 representing grade-level or higher achievement. Unfortunately FY2014 final grades for most first and second grade students were shown as “beginning,” “developing” and “secure” rather than with a numeric grade. For analysis purposes, “beginning” was given a numeric score of 55, “developing” the numeric score of 65, and “secure” the numeric score of 75. Additionally, FY2014 final numeric class grades followed by “modifications” were assumed to be equivalent to the same numeric grade without the qualifier.

Students increased their IRI reading levels an average of 5.2 points between the first benchmark in October 2014 and the last benchmark in May 2015. They increased their math benchmarks by 27.8 points. (See **Figure 9**.) Group 1 increased the most in reading while Group 2 increase the most in math. Group 8 which had the highest reading scores in October gained the least in reading during the school year, but gained more in math than Groups 6 and 7. These different amounts of increase among the eight groups suggests that grade level and beginning baseline scores may affect ending baseline scores independent of the amount of afterschool participation.

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<td>8</td>
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</tr>
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</table>

**Figure 9.** Average increase in benchmark scores during FY2015
A chart showing the relationship of afterschool attendance with increase in benchmark scores suggests that there is a relationship between attendance and benchmark change. (See Figure 10.) However, only in grade three are there consistent relationships between greater afterschool attendance and greater increases in reading and math scores. Much of the inconsistency is probably due to the small number of students in each category of students, therefore multiple regression provides a way to test the significance of independent contributions of a number of variables.

The multiple regression of May IRI scores on October IRI scores and afterschool attendance is shown in Equation 2 ($f^{2}\text{[2,130]}=386, p<.001; R^{2}=.86$):

**Equation 2:** May IRI = 7.6 + .77*October IRI + .02*Afterschool days.

The equation says that 86% of the variation among students on their May 2015 reading benchmark can be explained by two factors. The most important factor is their score on the fall benchmark, with the number of days they attended the afterschool program contributing a small but significant amount ($t=1.76, p=.04$, one tail). The equation means that a student’s May IRI would be expected to be 7.6 if the student had a zero on the October IRI. But most students score above a zero on the October IRI, and 0.77 times the October IRI score would be added. (The average October IRI score was 3.3 for first graders, 11.0 for second graders, 18.4 for third graders, 20.5 for fourth graders and 27.8 for fifth graders.) Every day the student attended the afterschool program added 0.02 to the May IRI score, such that a student who attended
Afterschool all 101 days would be expected to score 2.0 points higher than a student who attended just one day.

The multiple regression for the May 2015 math benchmark is shown in **Equation 3**, explaining one-third of the variation among students in their ending benchmark scores ($f[5,120]=13.7$, $p<.001$; $R^2=.36$):

Equation 3: \[
\text{May Math} = 31.9 + 17.9\times\text{Grade1} + 12.5\times\text{Grade2} + .46\times\text{October Math} + 0.11\times\text{Afterschool days} - 7.8\times\text{Cub Scout parent.}
\]

This equation is interpreted as the May 2015 math benchmark scores for third through fifth grade students would be 31.9 points if they had a zero score on their first math benchmark, had not attended afterschool, and did not have a parent involved in Cub Scouts. For first grade students would be 17.9 points higher on average and second grade students would be 12.5 points higher. But since few had zero on the fall benchmark, 0.44 times their fall benchmark score would be added. Since all these students had attended at least one day of the afterschool program, 0.11 would be added for each day they attended ($t=2.26$, $p=.01$, one tail). Thus a first grade student with the average fall benchmark score of 33.6 and attending afterschool one day would be expected to have a spring math benchmark score of 65.4 ($31.9 + 17.9 + .46\times33.6 + .11\times1$). They would be expected to score 76.4 if they attended all 101 days of the afterschool program.

It is not clear why having a parent involved in Cub Scouts is associated with a lower May math benchmark score. It may be related to the finding shown previously in **Figure 8** that parental involvement in Cub Scouts leads to more days of afterschool attendance. If the afterschool days’ variable is removed from equation 2, parental involvement in Cub Scouts loses its significant relationship with the May math benchmark. If parental involvement in Cub Scouts is removed from equation 3, then the effect of afterschool attendance on the May math benchmark is reduced, although still significant. So it appears that greater afterschool attendance results in higher math scores except for boys whose greater afterschool attendance is due to their parents being involved with their Cub Scout program.

Afterschool attendance in FY2015 appears to have a relationship with 2015 final grades. (See **Figure 11**.) Among students who attended fewer than 30 days, 16% received final grades below 70 in both reading and math, and 60% had grades below 80. Among those who attended afterschool for 30 to 59 days, 13% had grades below 70 and 47% had grades less than 80. This increase in grades between less than 30 days and 30-59 days in afterschool was statistically significant. The percent of students with grades below 70 continue to decline with greater number of days attended, but the percent with grades less than 80 did not continue to decline with greater attendance, but these differences were not statistically significant. This finding is consistent with a hypothesis that afterschool participation increases grades. However, it is also consistent with a hypothesis that better students attended afterschool regularly, and therefore previous grades need to be controlled.
The change in students’ grades from FY2014 to FY2015 would control for students’ abilities and could provide stronger evidence that the afterschool program helped students academically, but this is only possible for students in grades 2-5 in FY2015, since first grade students did not have grades for the previous year. This also has the problem of FY2014 grades for the younger students not being numerical. (See Figure 12.) However, it appears that student grades

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Figure 12. Number of students by FY2014 and FY2015 final class grades
increased substantially from FY2014 to FY2015. If this analysis’ conversion of text grades into letter grades is reasonable, then 25 of 82 students (30%) stayed at the same level in reading (highlighted in yellow), 48 (59%) increased their grade (above and right of the yellow) and 9 (11%) had a decrease in grades (below and left of yellow). In math, 22% stayed the same, 68% increased their grade, and 10% had a decrease in grades.

However, the change in final grades is highly related to the grade level of the student. Almost all the increases in final grades occurred among FY2015 second and third graders. (See Figure 13.) The greatest change in final grades was among students who went from second grade in FY2014 to third grade in FY2015, followed by students who went from first to second grade. Very little change in grades occurred among students who went from third to fourth grade. Only three fifth-graders in FY2015 received final grades and so are not shown in the figure. Although the numbers are very small, there does appear to be a relationship between afterschool attendance and change in final reading and math grades. The reading final grades increased the equivalent of one letter grade (60-69 to 70-79, 70-79 to 80-89, or 80-89 to 90-100) for third grade students who attended the FY2015 afterschool program for 1-29 days. However, it increased the equivalent of two letter grades for the students who attended afterschool for 90 or more days.

![Figure 13. Final class grade change FY2014 to FY2015, by days attended and grade](image)

The change was 1.9 and 1.8 for those who attended afterschool 30-59 days and 60-89 days respectively. Students who attended the afterschool program in FY2014 while in second grade but not in FY2015 while in third grade increased their final reading grades by a greater amount than those who attended the FY2015 afterschool program 1-29 days, but this could be due to family or school selection for FY2015 afterschool participation.
The relationship between afterschool attendance and change in final math grades was not as strong as in reading for third graders, but is still observed. Among second graders, those who attended afterschool 1-29 achieved greater change in reading and math final grades than those who attended 30-59 days, but the more days attended thereafter, the greater the increase in grades. The same pattern held for reading among fourth grade students, although there were no fourth grade students who had only attended afterschool in FY2014. Fourth grade students who attended 1-29 days of afterschool had no average change in final reading grades, but those who attended 30-59 days had an average 0.7 decline in reading, those attending 60-89 days had no average change in reading, and those attending 90 or days had an average 0.1 increase in reading grades. The relationship was much stronger in math where fourth graders who attended 1-29 days had a 1.0 decline in grades while those who attended 90 or more days averaged the same grade in both years (0.0 change).

Again, multiple regression allows the simultaneous control of a number of factors that might affect final grades. Equation 4 shows the multiple regression of FY2015 reading grade on all the factors that had a statistically significant effect ($F[3,60]=45.3,$ $p<.001; R^2=.69$). The equation explains about two-thirds of the variation among students in their reading grade, with going to the second grade in FY2015 having the greatest negative contribution with second grade students having reading grades 12.15 lower than third, fourth or fifth grade students. Second grade students in Group 1 were even 10.42 points lower than second grade students in other groups. Girls had reading grades that were 4.22 points higher than boys on average. The most important finding for this analysis is that afterschool attendance did not have a statistical relationship with final reading grades.

**Equation 4:** 2015 Reading grade = 80.5 - 12.2*Grade2 -10.4*Group1 + 4.2*Female.

The multiple regression for final math scores is similar to Equation 4 for final reading scores with two-thirds of the variation among student achievement based on four rather than three factors ($F[4,59]=33.8,$ $p<.001, R^2=.70$). The fourth factor in Equation 5 is that each day students attended the afterschool program was associated with a 0.06 higher final math grade. A student who attended all 101 days of the afterschool program would be expected to have a final math score 6.1 points higher than they would have if they had not attended at all ($t=2.48, p=.008,$ one tail).

**Equation 5:** 2015 Math grade = 76.2 - 11.4*Grade2 - 10.5*Group1 + 4.2*Female + .06*Afterschool days.

The final FY2014 grade did not enter Equation 4 or Equation 5, indicating that students’ academic ability in the current year was not directly determined by their academic ability as measured in the prior year. Any effect of academic ability as indicated by the final grade of the prior year would have to be indirect through being promoted from first to second grade, or in the assignment to afterschool Group 1. Since prior grades were not significant, this suggests that first grade students without prior year grades can be included in Equation 4 and Equation 5 along with the older students to test if afterschool attendance is associated with final FY2015 grades.
Equation 4a (F[4,114]=33.4, p<.001; R²=.54), does not explain as much variation among students in five grades as Equation 4 explained among students in four grades, but finds the same three factors statistically significant. In addition it shows that the reading grade of first grades students were about the same as second grade students and statistically different from the reading grades of students in grades three through five. More important, the final term in the equation shows that afterschool attendance is significantly associated with higher reading grades for first grade students even though it was not for older students. First grade students who attended 101 days of the afterschool program would be expected to have final reading grades 19.2 points higher than if they had not attended afterschool.

**Equation 4a:** 2015 Reading grade = 80.6 - 12.71*Grade2 - 23.33*Grade1 + 3.3*Female + .19*Afterschool days*Grade1.

For math, inclusion of first grade students resulted in **Equation 5a** that differs from Equation 5 in two ways. Being in first grade replaces being in Group 1 (most of the students in Group 1 were in first grade) and a fifth term is added. It shows that while afterschool attendance still has a significant effect on math grades for second through fifth graders, it has a much larger effect for first graders. Afterschool attendance made a large contribution to higher reading and math final grades for first graders, while afterschool made a small contribution to higher math final grades for student in the other grades.

**Equation 5a:** 2015 Math grade = 76.9 - 11.6*Grade2 - 18.3*Grade1 + 3.2*Female + 0.04*Afterschool days + 0.13*Afterschool days*Grade1.

The standardized regression coefficients of **Equation 5a** can be combined with the path model of **Figure 8** to show an overall causal model of contributions to students’ final math grades that is consistent with the data. (See **Figure 14**.) The number of days students attended the FY2015 afterschool program had a direct effect on increasing their final math grades, but being substantially greater for first grade students than for students in grades 2-5. In addition, females had higher math class grades than did males, and first and second grade students had lower math class grades (shown by the dashed arrow) than did students in grades 3-5. The assignment of students to afterschool groups did not have a direct effect on their final math grades, but students in Groups 1 and 8 attended more days of the...
afterschool program and this indirectly increased their final math grades, especially for first grade students in Group 1 whose path coefficient from days attended to math grade was greater than the path coefficient for grades 2-5. Parent involvement in the scouting programs or the Resource Center did not directly affect their students’ math grades, but indirectly increased their students’ math grades as parent involvement encouraged students to attend afterschool more frequently.

Although there are relationships among the student and parent characteristics at the left side of the figure, the figure does not show these relationships as they are not important to the model and its interpretation. For example, Group and school grade are related so there is some small positive and very indirect effect for first grade students in Group 1 who have greater afterschool attendance and thus slightly diminishes the direct effect on final math grade of being in the first grade.

Data are available for sixteen fifth-grade EES students who took the science MSA in the spring of 2015. One of the students did not attend the afterschool program and scored less than proficient on the science MSA. (See Figure 15.) One of the four who attended fewer than 30 days achieved the proficient level while two of three who attended 30-59 days achieved proficiency. The figure does not show clear relationship between afterschool attendance and science proficiency. The regression of actual scores on individual number of days attended could have occurred 8% of the time by chance with this small numbers of students, and fails to meet the traditional standard of a 5% or less probability of error.

Two Year Student Academic Outcomes

The program goals are to see commutative improvement of students involved in the afterschool program over several years. During these first two years of the grant, 198 students attended 1 to 198 out of the possible 201 days of the programs and averaged 83 days. The 77 students who attended in both FY2014 and FY2015 attended an average of 136 days spread out over both years. The students who enrolled only in the FY2014 program attended an average of 50 days, whether they were the 23 who attended Eston Elementary School during FY2015 or the 35 who were not longer at the school. The students who enrolled only in the FY2015 also attended an average of 50 days, although the 35 students in first grade attended an average of 56 days compared to the 28 in grades 2-5 who attended an average of 40 days.
It appears that the more days students attended the afterschool programs during the first two years, the higher their final grades in reading and math were, at least up to 149 days. (See Figure 16.) Those who attended 150 or more days did not appear to do any better than those who attended fewer days. However, this does not control for other factors.

Equation 6 explains one-eighth of the variation among students ($R^2 = .13$) and Equation 7 explains half of the variation among students ($R^2 = .48$). They differ from Equations 4a and 5a only slightly in the coefficients. Both show that every day the students attended the afterschool program during the first two years of the grant program, the higher their final FY2015 class grade by 0.02-0.03 points. The advantage of afterschool attendance on final class grades in math was even greater for FY2015 first grade students ($0.03 + 0.14 = 0.17$). The curvilinear patterns observed in the figure were not statistically significant when tested in the multiple regressions.

Equation 6: 2015 Reading grade = 72.4 + 3.1*third grade + 0.02*Two-year afterschool days.

Equation 7: 2015 Math grade = 76.8 - 11.6*Grade2 - 18.1*Grade1 + 3.1*Female + 0.03*Afterschool days + 0.14*Afterschool days*Grade1.
Discussion

Meeting Goals and Objectives

**Student Goal:** By June 2018 70% of program’s first cohort, students that have participated for 5 consecutive years in the 21st CCLC program, who started at a Basic level will score Proficient/Advanced on the 5th grade reading and math assessments (MSA or PARCC) and 60% will score at Proficient or Advanced in the 5th grade science assessment. And 95% of the programs first cohort that started at Proficient/Advanced will remain at this level.

**Student Year 1 Objective:** By June of 2014, 30% of the students that have participated in the 21st CCLC program and began at a Basic level will score at Proficient/Advanced on the reading and math MSA. –Achieved.

**Student Year 2 Objective:** By June of 2015, 40% of the students that have participated in the 21st CCLC program and began at a Basic level will score at Proficient/Advanced on the reading and math PARCC. –PARCC data are not available, but benchmarks and grades suggest it may have been achieved:

- More frequent afterschool attendance led to greater increases in benchmark reading scores and benchmark math scores;
- 59% of students had higher final reading grades this year than the prior year, and 68% had higher math grades;
- Prior final grades had no predictive value for this year’s final grades for afterschool students;
- The more frequently students attended afterschool, the higher their final reading grades for first graders, and the higher their final math grades for all students--but especially for first graders.

**Parent Goal:** For every year of participation in the afterschool program, the English Proficiency level determined by guidelines developed by the Adult Education Department of Chesapeake College will increase by ONE level for 50% of the parents that do not have a proficient or advanced level of English. And 100% of the parents complete the 20-session Parent Literacy program developed by ChesMRC and partner organizations.

**Parent Year One Objective** –Not Achieved.

**Parent Year Two Objective**– Not Achieved.

- 71% of mothers had beginning levels of English and 16% had intermediate levels,
- ESL class participation increased from 24% in FY2014 to 54% in FY2015; but only the 37% who took 15 or more hours of classes increased a level;
- 16% of fathers took ESL classes;
• Information on participation in the Parent Literacy program was not available.

Evaluation Questions and Answers

1. Does the afterschool program improve academic proficiency for FaRMS students and minority subgroups within FaRMS?

   a. Do students in the afterschool program perform better after participating in the program than before they participated?
   • Yes – on final grades in reading during the first year of participation for first graders, and on two years cumulative participation for others;
   • Yes – on final grades in math during the current year of participation and over two years of cumulative participation;
   • Yes – each day afterschool is attended increases the difference between the October and May benchmark scores in both reading and math

   b. Do students who participate regularly in the afterschool program, both during a year and across years, perform better academically compared with students who participate irregularly and students eligible for the program who did not participate at all?
   • Yes – Grades steadily improve with each day of afterschool attendance;
   • Information for students not enrolled in afterschool are not available for comparison, but the linear relationship between afterschool attendance and grades means that those attending over two years have an advantage over those attending for one year.

   c. Does participation in the afterschool program help FaRMS and minority subgroups come closer to the academic performance of other students in the school?
   • Data are not available for other students in the school for comparison. However, no differences were found in academic achievement among afterschool students of different races, ethnicities, and receipt of FaRMS, ELL and SPED services. Only gender made a difference.

2. Does the program help parents/caregivers with limited English to improve their English skills and thus help their children academically?

   a. Do parents/caregivers with children in the program improve their English skills?
   • Yes – for mothers with limited English who take 15 or more hours of ESL classes;
   • No – less than one-half of the parents with limited English took ESL classes.
b. Do parents/caregivers who participate regularly in adult literacy programs, both during a year and across years, improve their English skills more than those who participate irregularly or not at all?
   • **Yes** – All those who participated in 15 or more hours of ESL classes in FY2015 improved their English skills by one level.

c. Does improvement in English skills of parents/caregivers boost their children’s academic proficiency?
   • **No** – Mothers’ English ability and changes in it are not directly related to their students’ academic proficiency.
   • Parental involvement in scouts and the resource center associated with the afterschool program increases their students’ afterschool attendance, and thus indirectly increases their academic performance.
   • Mother participation in ESL classes during the two years was related to their participation in scouts and the resource center.

3. Does the program provide academic support in such a way that students and families want to participate year after year?

a. Does the program meet and maintain its enrollment targets?
   • **Yes** – average enrollment of 107 was a little higher than the previous year, and increased in the spring to compensate for a lower and fluctuating attendance.

i. Do most students attend the program regularly throughout the year?
   • **Yes** – Attendance varied more from day to day than in the previous year, yet on the average the same percent of the enrollment attended on given day;
   • **Yes** – About four-fifths of the 140 students in FY2015 are classified as regular attenders by MSA.

c. Do most students who enrolled in one year return to the program the following year?
   • **Yes** – 78% of the first year afterschool students who returned to the school in the second year returned to the second year of the afterschool program.

d. Do students and parents/caregivers say they like the afterschool program?
   • **Probably** – The question was not directly asked, but 69% of the families had parental involvement in the scout and resource center components of the afterschool program.
e. Do parents with limited English attend programs to improve their English?
   • Yes – 53% of the mothers with limited English took ESL classes, about
double the percent during the previous year;
   • Yes – All of the mothers with limited English who attended ESL classes
   for 15 or more hours improved one or more levels in their English.

Recommendations

Academic improvement takes time and the focus of the grant is to improve students’ academic
performance over their five years in elementary school. The afterschool program can only affect
student performance to the extent that students are involved with the program. The program also
recognizes the importance of parents to the academic performance of their students. To be able
to evaluate the effectiveness of the program, appropriate data need to be collected for the five
years of the program. The following recommendations are given by the evaluator based upon
the findings of this report:

Recommendation 1. Review possible reasons why students in Groups 1 and 8 attended the
afterschool program more days than students in the other groups, and determine if these reasons
be extended to other groups.

Recommendation 2. Document the reasons why some students returning to the elementary
school do not return to the afterschool program. Students should be retained in the program for
as long as possible to determine if academic gains continue to increase as days attended
accumulate across years.

Recommendation 3. Obtain the 2015 PARCC reading and math scores for the students who
participated in the FY2014 and FY2015 afterschool programs to determine if they show the same
relation to afterschool attendance as benchmark scores and final grades.

Recommendation 4. Make arrangements now for how the PARCC scores can be obtained in
future years for all afterschool participants, including those who move into middle school or
transfer to other Maryland public schools. Five-year effects of the afterschool program will be
less clear if one-third of the student are lost to follow-up every year.