



Eye on Evaluation

DATA AND ACCOUNTABILITY DEPARTMENT

D&A Report No. 13.03

February, 2013

ACADEMIC ACHIEVEMENT ACADEMY (AAA), 2011-12

Author: Anisa Rhea, Ph.D.

Summary and Recommendations

Purpose and Strategy

Extending the school day through programs that will supplement core courses, such as offering intensive, after-school tutoring or small-group study sessions in reading and mathematics, is one method districts use to boost school performance and narrow educational achievement gaps between students of different racial and economic backgrounds (Redd et. al, 2012). In 2010-11, the Wake County Public School System (WCPSS) K-12 Intervention Services launched the Academic Achievement Academy (AAA). The purpose of AAA was to raise student academic growth and proficiency levels at elementary and middle schools with low ABCs performance composites. It was expected that this rise in student achievement would help schools meet the overall program goal of increasing their performance composites to at least 70%. The performance composite reflects the percentage of End-of-Grade (EOG) and End-of-Course (EOC) exam scores in the school that are considered at or above grade level or proficient, which equates to scale scores that fall into achievement Levels III and IV.

The strategy AAA implemented to achieve this goal was the provision of short-term, after-school tutoring in reading and mathematics to students who needed additional support. The academy specifically targeted students in grades 3-8 with Level II and low Level III achievement levels on the previous years' reading or mathematics EOG exams, and students who were not currently meeting grade-level reading or mathematics benchmark standards and were at-risk of not meeting promotion standards.

Abstract

The Academic Achievement Academy (AAA) was initiated in 2010-11. It provided short-term, after-school tutoring in reading and mathematics for students in grades 3-8 with the goal of increasing the performance composites of participating schools to at least 70%. In 2011-12, AAA supported 1,185 students at 20 schools, 13 of which also participated in AAA in 2010-11. By the end of 2011-12, four first-year and four second-year schools had met the program goal. Findings indicate less of a positive impact on reading outcomes than mathematics, based on comparisons to a matched group of students. AAA cost about \$500 per student served in 2011-12, increasing to \$864 for each student who made academic growth. AAA was discontinued for the 2012-13 school year. Recommendations for future after-school program implementation efforts are offered.

Table of Contents

Recommendations	5
Background	7
Methodology	12
Implementation Results	15
Student Academic Outcomes	28
School Outcomes	38
Additional Analyses	43
Cost Analyses	51

Major Findings

AAA had a second year of implementation in 2011-12. The AAA spring 2012 academy provided after-school instructional resources to 20 elementary and middle schools with low ABCs performance composites. Overall, there were 1,185 students at those schools who received reading or mathematics tutoring from AAA, which was very close to the K-12 Intervention Staff's goal of serving 1,200 to 1,300 students. Among the students with prior EOG data, most (77.3%) met the program participation criteria of performing at an EOG relative achievement level between 2.0 and 3.3. Students performing within these achievement level ranges were expected to receive the most benefit from the short-term, targeted tutoring.

Did AAA help to raise student achievement at the targeted schools?

Analyses at the student level indicate that AAA tutoring had almost no impact on EOG proficiency and growth in reading and no more than a small, positive influence on mathematics. It appears that AAA was most effective among Level III students, which is where most of the small gains were found. It is not uncommon for programs to be more effective in yielding positive outcomes in mathematics than in reading. In their meta-analysis of summer programs that were similar in length and intensity to many after-school programs, Cooper et al. (2000) found less favorable outcomes on reading assessments than mathematics

Within this evaluation, reading outcomes typically showed either slightly greater results for the students who did not receive AAA tutoring or no difference between groups.

- Slight gains in proficiency between 2010-11 and 2011-12 were most commonly due to movement from Level II to Level III among both groups, with greater increases found for comparison students. The increases in the percentage of Level III students were primarily at high Level III (3.3 to 3.92) among the AAA group and at low Level III (3.0 to 3.29) among the comparison group.
- There was no overall difference in the percentage of AAA and comparison students meeting growth targets in 2011-12.
- Based on logistic regression results, being proficient on the 2011-12 reading EOG exam significantly increased the odds of meeting growth in reading that same year. The extent of this impact was the same regardless of whether students participated in AAA or not. AAA reading tutoring did appear to have a minor, yet statistically significant, positive impact on LEP students making growth.

AAA participants had slightly better mathematics outcomes, in terms of reaching proficiency and meeting growth targets, than their matched counterparts.

- The one-year gains in proficiency were primarily due to movement from Level II to Level III among both groups. Again, for AAA students these increases are seen at high Level III (3.3 to 3.92) and at low Level III (3.0 to 3.29) for comparison students.

- There was a statistical difference in the percentage of Level III students who met their mathematics growth targets favoring the AAA group. It appears that the performance of the high Level III students contributes to most of this positive change.
- The odds of making growth in mathematics in 2011-12 were higher for students who received mathematics tutoring from AAA and were proficient on the EOG exam in the spring of 2012 than for proficient students who did not participate in AAA.

Table 1
Comparative Summary of Student Achievement Outcomes by Subject

Outcome	Reading	Mathematics
Gains in proficiency before and after AAA participation	Slightly lower for AAA group than comparison group	Slightly greater for AAA group than comparison group
Meeting growth targets in 2011-12	No difference between groups	Slightly greater for AAA group than comparison group

Were AAA schools able to increase their performance composites to at least 70%?

A key goal of AAA was to help the district’s lowest performing elementary and middle schools raise their performance composites to at least 70%. 2011-12 was the second year of AAA implementation for 13 of the 20 participating schools because they did not raise their performance composites to at least 70% during the first implementation year (2010-11). Based on end-of-year data for 2011-12, eight of the 20 participating schools (40%) met the program goal. Half of these schools were first-year AAA schools and the other half were second-year AAA schools. Statistically significant gains in the percentages of students who scored proficient after receiving AAA tutoring were found at very few schools. Regardless of the statistical impact, the schools with the highest percentages of AAA students meeting growth, in most cases, also had the greatest improvement in AAA student proficiency.

Did the tutoring dosage based on students’ attendance at the AAA tutoring sessions have any impact on their reading or mathematics outcomes?

Current research has presented evidence of the importance of high student attendance at remediation intervention programs to reap the greatest benefits. Redd et. al (2012) reviewed experimental, quasi-experimental, and non-experimental studies on the impact of extended school-day programs, including targeted interventions for low-performing students and additional hours of core classes or intensive tutoring after the school day, on academic achievement outcomes such as standardized test scores. They present findings which suggest that these programs are more effective if student participation rates are high. Results from studies on summer school programs that are similar in duration and intensity to after-school programs can also be informative. Based on their literature review on summer learning loss and the effectiveness of summer learning programs, McCombs et al. (2011) cited various studies that found a positive relationship between attendance and outcomes.

Overall, most AAA students (82%) participated in the program at least 75% of the time, which amounts to attending a minimum of 15 sessions lasting 90 minutes each (totaling 22.5 hours). A greater attendance rate was found among elementary students than middle school students. Based on survey results, 67% of site coordinators responded that students were rarely absent from tutoring sessions.

The findings presented in this report indicate that students' level of attendance (dosage) in the AAA tutoring intervention did not positively impact their EOG proficiency or academic growth for 2011-12. Students with high attendance did not have more positive academic outcomes than those with low attendance.

To what extent did students from the AAA spring 2011 academy cohort reach proficiency by the end of the 2011-12 school year?

Most of the students who received support from AAA in 2010-11 were not proficient a year later. For instance, a third of the students who received reading tutoring were proficient in 2011-12. Among the students tutored in mathematics, 49.5% were proficient, representing a one-year statistically significant decline of about 10 percentage points between 2010-11 and 2011-12.

In general, the proficiency rates appear to be greatest during AAA implementation (2010-11) and lowest the years before and after. Research has suggested that the effects of remediation interventions may be most lasting, if "booster" sessions are available (Snow, Burns & Griffin, 1998). It is possible that AAA contributed to this slight bump in proficiency and that students might have benefited from some continued support in 2011-12, especially for reading. For instance, a small percentage of AAA students who still had low levels of proficiency after receiving reading tutoring in 2010-11 participated in AAA reading intervention in 2011-12. This group's reading proficiency doubled after a second dose of tutoring.

What are the site coordinators' perspectives of AAA implementation in 2011-12?

The site coordinators at participating schools provided positive feedback on the implementation efforts of AAA. They reported high levels of student and tutor engagement, district and school level support, and a general satisfaction with the program. The materials were viewed as both an effective program element and as an area of improvement.

What was the cost of AAA per student served?

The cost of the program implementation overall was about \$500 per student served. The cost of providing tutoring through AAA during the spring 2012 academy increases considerably if the cost is calculated per student who made academic growth (\$864) or per proficient student (\$1,152). The provision of reading tutoring is more expensive than mathematics tutoring when considering the success of the participant.

Study Limitations

There are a few study limitations which may have influenced the findings presented in this report.

Within this report, the examination of changes in student proficiency rates after AAA implementation is restricted to students who have prior EOG results, thus excluding grade 3. As such, the total impact of AAA on all participants is not presented. Grade 2 data from The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) was not used to assess academic performance prior to AAA participation because this set of measures for assessing the acquisition of early literacy skills were piloted in WCPSS in 2009-10 and used inconsistently in 2010-11. Moving forward, consistent district implementation of mCLASS:DIBELS Next for K-3 literacy and possibly K-3 mathematics provides the opportunity to use these data as pre-intervention measures.

This evaluation compares the outcomes of AAA students to those students who did not receive AAA tutoring, yet were demographically similar to the participants. Although the matched sample is similar to the AAA group, it could have been more tightly aligned if different sample selection methods had been employed. For instance, EOG achievement levels were used to obtain a sample of students at equivalent levels of proficiency as the AAA participants. Whereas the percentages were identical for AAA students and their matched counterparts at achievement Level III, a larger percentage of AAA students fell within the low Level III range, which was part of the service criteria. This difference may have influenced the findings drawn between the groups. A better method might have been to match students by EOG relative achievement level or scale scores as closely as possible. Since the AAA program was intended to target students within specific achievement levels, drawing a comparison sample from a group of students falling within achievement Level II and low Level III first, and then matching by demographic characteristics may have yielded a comparison group that more closely represented the population AAA was expected to serve rather than the one it did serve.

A prevalent standard for educational research is to examine whether one program is more effective than another similar program (Schneider et al., 2007). As the paragraph above explains, the analyses used in this evaluation of AAA draws comparisons between the intervention participants and a matched group of students who did not receive AAA tutoring, yet may or may not have received other reading or mathematics interventions. Comparisons are not made between AAA and other program models. The Data and Accountability (D&A) Department is planning to conduct a comparative analysis examining the effectiveness of several after-school programs in WCPSS. This will allow various stakeholders to better assess the value of one program over another.

Recommendations

AAA was not continued in the 2012-13 school year; nevertheless, the evaluation findings from its implementation in 2011-12 can inform policy and implementation efforts of future after-school instructional programs within WCPSS. The following recommendations are offered to

help improve such efforts. Additionally, if AAA were to be implemented again, D&A suggests that modifications be made to the program based on these recommendations.

Offer after-school remediation that is sufficient in duration and intensity. According to research, the duration and intensity of after-school programs matter. It appears that short-term interventions, particularly for reading, are not effective, especially in the longer-term. In their meta-analysis of 53 studies measuring student achievement in reading and mathematics after-school programs, Lauer et al. (2004) found that programs that were implemented for at least 45 hours had statistically significant positive results. Such programs should not run indefinitely though. The results started to decline as reading programs exceeded 210 hours and mathematics program ran for more than 100 hours. AAA provided 30 hours of intervention support in either reading or mathematics, which appears to be insufficient in length to make a sizable impact on student achievement alone.

Establish realistic short-term, intermediate, and long-term goals for program outcomes. It is possible that WCPSS after-school tutoring programs such as AAA are helpful to the students who participate in them, even if there are limited statistically significant, positive impacts on state end-of-year test scores for proficiency and growth. In their review of after-school programs, Hammond & Reimer (2006) indicate that positive impacts should not be expected for at least six months after program implementation. They also indicate that improved test scores should not be the only or even the primary program goal since these programs involve much less time and intensity than classroom instruction. Typically, the after-school program impact on achievement exams is small. Focusing on intermediate outcomes such as improvements in homework completion, grades, higher-order thinking, content knowledge, and study habits appear to be more appropriate (Granger & Kane, 2004).

Use quality materials aligned with the North Carolina curriculum. After-school programs may be more effective at producing reading and mathematics outcomes if their instructional materials encompass a well-defined reading and mathematics curriculum that is aligned with North Carolina and the WCPSS Curriculum Management Application (C-MAPP). Other after-school program delivery models might be considered as well. WCPSS could provide extra support for homework within the core curriculum, rather than relying on newly structured programs based on additional instructional materials.

When additional materials are used, they should be flexible to both teachers for differentiation purposes and students to promote engaged participation. Although the materials used for AAA implementation in 2010-11 were found to be highly engaging with some evidence of positive impact in different contexts than AAA, K-12 Instructional Service staff selected different materials for the 2011-12 implementation that provided opportunities for greater instructional differentiation for students. Ideally, the materials chosen may also include instructional assessments that can be administered immediately prior to, during, and after the intervention to help gauge improvements or changes in student performance. During its first year of implementation (2010-11), the materials used to implement AAA included a pre- and post-intervention assessment to measure short-term student progress in reading and mathematics. In general, somewhat positive trends were found between assessments. There were no coordinating assessments for the materials used in 2011-12.

Background

In 2010-11 and 2011-12, AAA operated for 11 weeks, beginning in mid February and running through the end of April/beginning of May, with 10 weeks devoted to instruction. Students attended either reading or mathematics tutoring for two days each week. Each tutoring session lasted 90 minutes. Students who had perfect attendance at the academy would receive 30 hours of reading or mathematics instruction in addition to what they received in the classroom. These additional resources were expected to give students the extra support needed to bolster their performance on the EOG exams, which were administered a few weeks after the final academy session.

The 2010-11 academy supported over 1,300 students in grades 3-8 from 24 schools that had a performance composite of less than 70% in 2009-10. An evaluation conducted by D&A (Baenen & Lougee, 2011) found that at the end of the 2010-11 school year, 9 of the 24 schools had performance composites that exceeded 70%. Results also indicated that when compared to their performance just prior to the academy, a higher percentage of fifth through eighth grade participants reached their reading and mathematics growth targets after their participation in AAA. No comparisons were drawn between AAA participants and similar students who did not receive the intervention. Although this method was considered, it was not used because the program was in its first year of implementation and there were also concerns about the availability of “complete information on additional support services” the control group might have received (Baenen & Lougee, 2011). The progress of AAA students were compared to the district overall and the materials used for implementations included a pre-post assessment that allowed short-term student progress to be monitored.

The recommendations emphasized in the 2010-11 evaluation were considered by K-12 Interventions Services staff. Specific changes to the second year of implementation in 2011-12 were made based on the following recommendations:

1. Select and place students more strategically.
2. Enhance recruitment of value-added teachers and refine selection criteria for other highly qualified teachers.
3. Provide a tighter match of instruction to student needs through grouping strategies and greater differentiation.

In response to these recommendations, K-12 Interventions Services staff utilized student and teacher data provided by D&A to assist principals and site coordinators in identifying students eligible for participation and highly effective teachers to recruit as tutors. The staff also encouraged a more systematic selection process of assigning participating students to tutoring groups. For instance, tutoring groups were created for each subject based on student ability or need rather than grade level and each tutor was assigned a group with no more than 6 students. These modifications are discussed in greater detail in the following section of this report.

The K-12 Interventions Services staff also made the following changes in preparation for the second year academy.

- Principals of 22 elementary and middle schools were selected to participate in AAA during the spring of 2012 based on the school's performance composite for 2010-11. Unlike the first year academy, these school principals were given the option of accepting or declining the invitation to secure better buy-in of the program and because they may have had other intervention programs already in place.
- A teacher to student ratio of 1 to 6 (rather than 1 to 7) was implemented to promote more time for individual attention and to allow tutors to pair off students to work collaboratively.
- Schools projected to have at least 100 participating students had the option of hiring two site coordinators who could share the responsibilities of program implementation and oversight.
- To provide high quality materials that also gave tutors the flexibility to differentiate instruction according to the needs of their students, K-12 Intervention Service staff partnered with Academics Department staff to select new research-based materials for delivering reading and mathematics remediation in the spring 2012 academy.

Spring 2012 Academy

School Selection

Invitations to participate in the spring 2012 academy were sent to the principals of 21 elementary and middle schools with 2010-11 performance composites below 70%. The K-12 Intervention Services staff also extended an invitation to Walnut Creek Elementary School. The staff thought AAA would be an appropriate source of support during Walnut Creek's opening year in 2011-12, given its projected enrollment of a large proportion of students with academic risk factors.

Two of the principals whose schools participated in the spring 2011 academy declined a second year of participation, resulting in 20 participating schools for the spring 2012 academy. Among these 20 schools, 6 elementary schools and River Oaks Alternative Middle School were first year participants. The other 13 schools participated in AAA during the 2010-11 school year and were invited to hold academies for a second year because they had not yet reached a performance composite of 70%. Although the majority of these 13 schools had increases in the percentage of proficient exam scores between spring 2010 and spring 2011, these gains were not sufficient enough to raise their performance composites to 70%.

Staff Selection

Principals at each of the 20 participating schools selected a staff member to be their AAA site coordinator in charge of program implementation and oversight. Schools that were allotted 100 or more participant slots were allowed two site coordinators. All site coordinators received the same compensation. Site coordinators typically held school-based positions such as classroom teachers and instructional resources teachers (IRTs).

Teachers from across the district were hired as academy tutors to deliver reading or mathematics remediation to program participants. The number of tutors at each site was allocated depending on the number of students served and was expected to yield a 1 to 6 teacher to student ratio. Within the recruitment process for the 2010-11 academy, teachers who were identified as highly effective based on ratings from the Education Value-Added Assessment System (EVAAS) were given priority. Due to confidentiality and privacy issues surrounding teacher level EVAAS data, these data were not available to be used for teacher recruitment for the 2011-12 academy. Instead, D&A provided K-12 Intervention Services staff with teacher-level data to assist in tutor recruitment. These data showed the percentage of students who had met their growth targets in reading and mathematics for the 2010-11 school year by the classroom teacher for grades 4 through 8. Teachers who served at least 12 students and who had at least 70% of them making growth in reading or mathematics were considered candidates.

Selected teachers were invited to attend an AAA information session held in mid January, at which time they could sign-up to participate as a tutor for the spring 2012 academy. Although a large percentage of the recruited candidates attended the information session, many did not accept the tutor position. Recruitment of tutors for the spring 2012 academy may have been impacted by two changes in the way they would be compensated. In 2011-12, there was a flat \$35 hourly pay rate for all teachers hired as tutors and with no possibility of being reimbursed for any travel expenses incurred. These compensation conditions differed from those available to AAA tutors for the 2010-11 school year. For example, spring 2011 academy teachers who were identified as highly effective (based on ratings from EVAAS) received a higher hourly pay rate than other teachers who were hired as tutors, and teachers who were hired to tutor at a different school received travel reimbursements.

Since the first recruitment method did not secure an adequate number of tutors, a second information session and alternative recruitment techniques were used. There were several ways that the K-12 Intervention Services attempted to fill the gap in tutoring positions: principals were asked to recommend teachers, current high school teachers and retired teachers who previously worked in the district were solicited, and some hired tutors were asked to work at two academy sites on alternating days of the week. All tutors who were eventually hired attended an AAA training session held on February 4, 2012. A site-based meeting with site coordinators and their tutors was also held prior to the first tutoring session.

Student Selection

One goal of AAA was to serve between 1,200 and 1,300 students in the spring 2012 academy. Each of the schools was allotted a certain number of students, based on the needs of each school, who could attend the academy. D&A provided data to each school indicating the number of proficient EOG and/or EOC exam scores needed to reach a performance composite of 70% in 2011-12. These data helped to inform allotment decisions. Principals were informed of the number of students who could be served in the spring 2012 academy.

In an effort to establish a systematic process for selecting program participants, D&A staff also provided student-level academic performance data to each school. Each school's roster identified current students who earned a scale score within achievement Level II or a low Level

III on the reading EOG or the mathematics EOG in 2010-11. A low Level III was operationalized as a relative achievement level between 3.0 and 3.3. Relative achievement levels are a metric that indicates where a student's scale score falls within each achievement level by attaching decimal places to the usual achievement level designation. For example, a relative achievement level score of 3.48 would indicate that a student's scale score is in the middle of the Level III range for that test. As such, 3.3 was designated as the upper limit of a low Level III, the highest achievement level for which students were eligible for AAA participation. A total of 863 students comprised the rosters.

Principals and site coordinators were instructed by K-12 Intervention Services staff to use the student rosters to select program participants, with certain caveats. The vast majority of elementary and middle school students listed on the rosters were in grades 4 through 8 in 2011-12. Some third grade students who fell within achievement Level II and were retained in grade were also identified. Staff also selected other students who were not identified on the rosters but were eligible for participation, such as third grade students who were not meeting grade level reading or mathematics benchmarks and were at risk of being retained and transfer students who were academically at-risk. Principals were also asked to consider the intervention services students were already receiving when selecting AAA candidates and to avoid pulling students from those programs, especially if the programs were also after school with a focus on reading and mathematics remediation. Inspection of the participant list indicated that staff did use the provided rosters to select most of the student participants.

Once program candidates were selected, an information letter was sent inviting parents to enroll their children in the academy. Program incentives such as offering a low teacher to student ratio (1 to 6) and providing an after-school snack and transportation home from the academy were specifically mentioned to encourage participation. A waiting list for each academy site was created if all allotted slots were filled and there was still an interest in enrollment.

Tutoring Schedule

Principals at each participating school choose between a Monday/Wednesday and a Tuesday/Thursday schedule for the 11 week academy. Scheduling adjustments were made to account for missed sessions due to teacher workdays and track-out days for year round students. As such, students might attend 3 or 4 days of after-school tutoring during pre-specified weeks. Ten of the 11 weeks were specifically reserved for instruction, equaling 20 tutoring sessions. Scheduling for the final week included one day for review and one day for celebration, resulting in a maximum of 22 total sessions. School principals also determined whether their site would offer tutoring in reading, mathematics, or both subjects depending on the remediation needs of the targeted students and the type of programs currently offered at the school. Individual students would, however, receive tutoring in one subject only.

Instructional Materials

Based on the evaluation results of the spring 2011 academy, the Voyager materials used to implement AAA in 2010-11 were not chosen for the 2011-12 school year because they did not sufficiently allow for differentiation of instruction nor were they judged to be the best resources

to use for brief programs, such as the 11 week academy. The instructional materials used for AAA in 2011-12 were recommended by WCPSS Academics Department staff. The materials for reading were *Reading for Information* at grades 3-5 and *Read Excel* at grades 6-8. Students in grades 3-8 received mathematics tutoring based on materials from a company called Teacher Created Materials. Although the materials were deemed appropriate for providing reading and mathematics remediation to the targeted students, there was no formal evidence of their alignment to the North Carolina EOG assessments.

Methodology

A central purpose of this report is to examine whether there was an increase in the proportion of AAA students who met their growth targets and proficiency benchmarks at the end of the 2011-12 school year, which in turn was expected to raise the participating schools' performance composites to at least 70%. Several research questions guide the analyses of AAA implementation and academic outcomes, as shown in Table 2. Additional analyses were also conducted to address several research questions that arose during the evaluation process. Basic analyses calculating the cost of providing AAA tutoring to students was also conducted. The research questions are investigated using a variety of data sources and methods which are described below or in subsequent sections of this report.

Table 2
Research Questions

Area of Analysis	Research Question
Implementation	What is the enrollment and attendance data of the students served? What are the characteristics of the students served? What are the site coordinators' perspectives of AAA implementation in 2011-12?
Academic Outcomes	Did the participating students improve their EOG reading and mathematics proficiency levels in 2011-12? Did the participating students reach their End-of-Grade (EOG growth targets for 2011-12? Did AAA students achieve stronger EOG outcomes than students with similar characteristics who did not receive the service? Did the schools participating in the spring 2012 academy raise their performance composites to at least 70% by the end of the 2011-12 school year?
Additional Analyses of Outcomes	What was the EOG proficiency rate of the 3 rd -grade AAA participants in 2011-12? How does the tutoring dosage, i.e., the amount of tutoring received, affect the academic outcomes? What is the probability of students meeting their growth targets? To what extent did students from the AAA spring 2011 academy cohort reach proficiency by the end of the 2011-12 school year?
Cost Analyses	What is the cost of AAA per student served? Per student reaching proficiency? Per student making growth?

D&A conducted a short, online survey of the site coordinators to gather their feedback on the implementation of AAA at their respective sites. Each of the 25 site coordinators were invited to participate in the survey. The response rate was 84%.

AAA site coordinators from each of the 20 participating schools provided student rosters to D&A. Based on the AAA rosters, there were a total of 1,185 students initially enrolled in the spring 2012 academy. The participants' attendance data included in these rosters are summarized in this report. Demographic and academic achievement data obtained from end-of-year (EOY) student rosters for the 2011-12 school year were available for 1,167 participants only. Among these students, academic performance data before (2010-11) and after (2011-12) participation in AAA were available for 818 students in grades 4-8, including 489 who received tutoring in reading and 329 participating in mathematics tutoring. Students in grade 3 are excluded from all academic analyses because they do not have EOG proficiency or growth data for 2010-11; however, their overall 2011-12 proficiency rate is reported. Figure 1 shows the flowchart of the analytical samples.

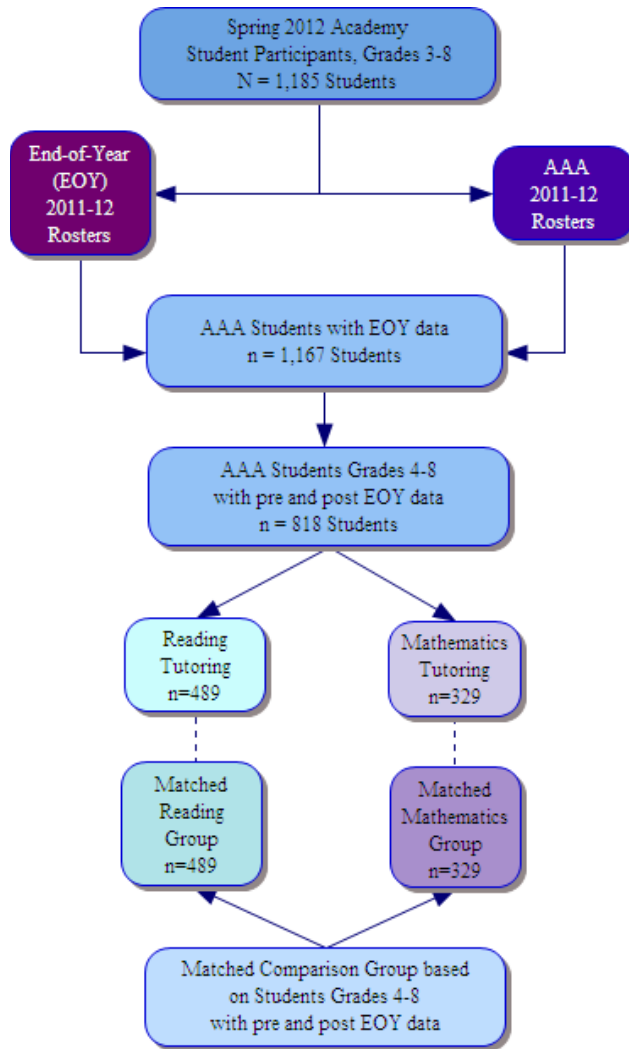
Matched Student Comparison Group

Student outcomes are expected to improve over the course of a school year, so using a matched comparison group is especially important for this study. Therefore, to facilitate a more robust examination of the academic outcomes of AAA participants, matched comparison groups of similar students who did not participate in AAA were selected for the 489 students who received tutoring in reading and the 329 students who participated in mathematics tutoring. Although these students did not receive tutoring from AAA, they may have received other reading or mathematics interventions or programs.

In reading, a one-to-one matched sample was randomly drawn from all students in grades 4-8 in 2011-12 who had reading EOG achievement levels for 2010-11 and 2011-12 and a reading academic change score for 2011-12. Among these eligible students, students were matched based their reading EOG achievement level for 2010-11 and several 2011-12 indicators including grade level, race/ethnicity, limited English proficiency (LEP) status, economic disadvantage indicator, and receipt of special education services (SWD). The one-to-one matched mathematics sample was similarly created using mathematics EOG achievement levels in place of reading.

Students who comprised the matched comparison group for reading were not eligible for selection for the matched comparison group for mathematics. Thus, the random selections yielded two unique groups (489 matched reading students and 329 matched mathematics students) who hold similar attributes as the AAA participants for which academic outcomes are compared in this report.

Figure 1
Analytical Sample Flowchart



Implementation Results

In 2011-12, a total of 20 schools participated in AAA. Among the participating schools were 15 elementary schools and five middle schools, including River Oaks Alternative Middle School. Thirteen of the schools also participated in AAA during the 2010-11 school year. Nine of the 10 elementary schools (excluding Jeffreys Grove Elementary School) were Title I schools in 2011-12 school year. One goal set for the spring 2012 academy was to serve between 1,200 and 1,300 students. According to student rosters provided by site coordinators, 1,185 students participated in AAA. The majority of these students (60.7%) were assigned to reading tutoring. Five schools offered reading tutoring only and three schools tutored students in mathematics only. Wilburn Elementary School had the largest number of participating students (125) and River Oaks had the fewest (17).

Table 3
AAA Participants by School and Subject, 2011-12

School	Total # of Students	Reading	Mathematics
All Elementary (n=10)	938	561	377
Barwell Road Elementary Year Round**	60	37	23
Brentwood Magnet Elementary**	72	72	0
Bugg Magnet Elementary *	73	63	10
Conn Magnet Elementary*	36	36	0
Creech Road Elementary**	49	0	49
Fox Road Elementary**	47	0	47
Hodge Road Elementary Year Round**	94	63	31
Jeffreys Grove Elementary	70	34	36
Knightdale Elementary**	49	49	0
Lincoln Heights Elementary*	72	32	40
Lynn Road Elementary**	29	14	15
Poe Magnet Elementary*	34	34	0
Stough Elementary*	49	26	23
Walnut Creek Elementary*	79	36	43
Wilburn Elementary Year Round**	125	65	60
All Middle (n=5)	247	158	89
Carroll Middle	67	67	0
East Garner Magnet Middle	37	0	37
East Millbrook Magnet Middle	70	52	18
Moore Square Magnet Middle	56	31	25
River Oaks Alternative Middle	17	8	9
Total (N=20)	1,185	719 (60.7%)	466 (39.3%)

Note: ** indicates schoolwide Title I schools; * indicated targeted assistance Title I schools.

Attendance

Attendance rates are based on the ten weeks of instruction, equaling 20 tutoring sessions each lasting 90 minutes. Most schools also offered a review session and a closing celebration, which added an extra one or two sessions to the program. Attending 20 sessions (30 hours of instruction) was the basis for perfect attendance (100%). Most schools reported attendance rates above 100% because they included the extra sessions in their calculations. For example, a participation rate of 105% or 100% represents 21 and 22 sessions, respectively

Nearly all of the schools held between 20 and 22 AAA sessions. The exceptions include Hodge Road Elementary School that held 18 sessions only, resulting in a maximum attendance rate of 90%; and Wilburn Elementary School that had an attendance rate of 115% because it held 23 sessions.

Table 4 shows the attendance data by school for the 1,185 students. Two trends are evident within the data shown; attendance was strong overall yet differs by school level.

- There is a wide range in the number of AAA sessions that students attended. For example, at Barwell Road Elementary School, students attended between 5 and 22 sessions in the spring 2012 academy yielding a participation rate between 25% and 110%. Despite the wide participation range, mode data indicate the most students had relatively high attendance.
- Elementary students had better AAA attendance than middle school students. On average, AAA elementary students attended 18 sessions and had an average participation rate of 91%. It was most common for elementary students to attend 21 sessions, yielding a 105% participation rate. Middle school students averaged 14 sessions and a 71% participation rate, although students most frequently attended 17 sessions, resulting in a participation rate of 85%.

Table 4
AAA Participant Attendance by School, 2011-12

School	Total Number of Students	Days Attended				Percent of Days Attended			
		Mean	Mode	Standard Deviation	Range	Mean	Mode	Standard Deviation	Range
All Elementary	938	18	21	3	5 - 23	91%	105%	17%	25 - 115%
Barwell Road	60	16	19	5	5 - 22	81%	95%	25%	25 - 110%
Brentwood	72	19	20	3	7 - 21	93%	100%	15%	35 - 105%
Bugg	73	20	21	2	5 - 22	100%	105%	12%	25 - 110%
Conn	36	18	21	4	5 - 22	91%	105%	22%	25 - 110%
Creech Road	49	19	21	3	10 - 22	97%	105%	15%	50 - 110%
Fox Road	47	19	19	2	12 - 21	95%	95%	9%	60 - 105%
Hodge Road	94	16	17	1	10 - 18	82%	85%	7%	50 - 90%
Jeffreys Grove	70	20	22	4	5 - 22	98%	110%	20%	25 - 110%
Knightdale	49	19	21	3	6 - 21	94%	105%	15%	30 - 105%
Lincoln Heights	72	20	21	2	13 - 22	101%	105%	8%	65 - 110%
Lynn Road	29	18	21	3	8 - 21	90%	105%	17%	40 - 105%
Poe	34	19	21	3	6 - 21	94%	105%	17%	30 - 105%
Stough	49	18	21	5	6 - 22	89%	105%	25%	30 - 110%
Walnut Creek	79	18	18	1	15 - 20	89%	90%	7%	75 - 100%
Wilburn	125	17	18	3	5 - 23	84%	90%	17%	25 - 115%
All Middle	247	14	17	4	2 - 21	71%	85%	21%	10 - 105%
Carroll	67	12	12	4	2 - 21	62%	60%	21%	10 - 105%
East Garner	37	14	19	5	4 - 21	71%	95%	23%	20 - 105%
East Millbrook	70	14	17	4	6 - 20	71%	85%	18%	30 - 100%
Moore Square	56	16	18	4	5 - 21	79%	90%	19%	25 - 105%
River Oaks	17	16	17	4	8 - 21	80%	85%	20%	40 - 105%
Total	1,185	17	21	4	2 - 23	87%	105%	20%	10 - 115%

Note: Attendance data are calculated based on the maximum number of sessions offered at the school and a set 100% attendance, representing 20 sessions attended.

Table 5 reports attendance data for all AAA students and supports the aforementioned finding that the AAA tutoring sessions were well attended by student participants.

- Most students (82%) participated in AAA at least 75% of the time, which amounts to attending a minimum of 15 sessions.
- About one third (35%) of students had perfect attendance.
- Only a small percentage of students (7%) participated in AAA less than half the time.

Table 5
Total AAA Participant Attendance, 2011-12

Days Attended	Percent Participation	# of Students	% of Students	Total
2 to 9	Less than 50%	80	6.8%	
10 to 14	50% to 70%	139	11.7%	219 (18.4%)
15 to 17	75% to 85%	263	22.2%	
18 or 19	90% to 95%	289	24.4%	
20 or more	100% or greater	414	34.9%	966 (81.6%)
	Total	1,185	100%	

Note: Shaded cells indicate participation rates at 75% and above.

Students Served

EOY demographic and academic achievement data for the 2011-12 school year were available for 1,167 of the AAA students. These data show that the majority of students served in the spring 2012 academy were first year participants, whereas a small percentage had also received services in the spring 2011 academy.

Table 6
Spring 2012 AAA Participants by Year of Participation

Years of AAA Participation	Total
One year (Spring 2012)	1,003 (85.9%)
Two years (Spring 2011 and 2012)	164 (14.1%)
	1,167

Table 7 presents the demographic characteristics of the students served by AAA. The percentage of students within each subgroup are compared to those found in WCPSS overall. Data indicate that high percentages of minority and economically disadvantaged student populations participated in the spring 2012 academy.

Race/Ethnicity: The majority (59%) of the AAA students were Black/African American students, at a percentage more than twice that of the district; and almost one fourth (24%) of the AAA students were Hispanic/Latino, about nine percentage points above the district.

Gender: The male to female ratio for AAA was the exact inverse of the district. Just over half of AAA participants were female (52%).

Special Programs: Slightly less than three fourths (72%) of AAA students were considered economically disadvantaged. AAA served a small percentage (14%) of LEP students yet almost twice that of the district. Only a few academically gifted students were enrolled in AAA.

Table 7
AAA Participants' Demographic Characteristics, 2011-12

		AAA (Grades 3-8)		WCPSS (Grades K-12)
		#	%	%
Race/Ethnicity	American Indian or Alaska Native	3	0.3%	0.4%
	Asian or Pacific Islander	15	1.3%	6.3%
	Black or African American	691	59.2%	24.7%
	Hispanic or Latino	279	23.9%	15.0%
	Multi-racial (two or more races)	39	3.3%	4.3
	White	140	12.0%	49.3%
Gender	Female	601	51.5%	48.9%
	Male	566	48.5%	51.1%
Special Programs	Economically Disadvantaged (ED)	844	72.3%	33.3%
	Limited English Proficiency (LEP)	163	14.0%	7.5%
	Special Education (SWD)	126	10.8%	13.4%
	Academically Gifted (AG)	23	2.0%	27.3%
Total		1,167		

Data source: WCPSS data were retrieved from <http://www.wcpss.net/demographics> (Vouk, 2012).

The spring 2012 AAA academy predominately served elementary students with approximately 300 students in grades 3, 4, and 5. Considerably fewer middle school students were served (about 100 or fewer students per grade level).

Table 8
AAA Participants by Grade and Subject, 2011-12

Grade	Total	Reading	Mathematics
2	1	1	0
3	303	192	111
4	314	183	131
5	301	174	127
Grades 2 to 5	919 (78.7%)	550	369
6	106	75	31
7	67	43	24
8	75	40	35
Grades 6 to 8	248 (21.3%)	158	90
Total	1,167	708	459

Data source: End-of-Year (EOY) student rosters from 2011-12.

Note: One 2nd-grade student was served, based on EOY grade-level data; however, the AAA site coordinator reported him as a 3rd- grade student.

As previously discussed, performing at a EOG relative achievement level between 2.0 and 3.3 was one of the eligibility criteria for participation in AAA. To determine the extent to which participants met this selection criterion, the 2010-11 EOG performance data of students in grades 4 to 8 in 2011-12 were examined. Of these students, 77.3% had EOG relative achievement levels in either reading or mathematics that fell within the established range. Overall, students who received tutoring in mathematics were more likely to have met this eligibility criterion than students who were reading tutoring recipients, although the results vary by grade level as shown in Table 9.

Table 9
AAA Participants' EOG Relative Achievement Levels, 2010-11
Prior to Participation in the AAA Spring 2012 Academy

2011-12 Grade Level	Total Served by AAA	Tested Grade Level	Range	% between 2.0 and 3.3	# missing data	# with data
Reading						
4	183	3	1.40 to 3.75	65.6%	7	176
5	174	4	1.43 to 4.06	82.8%	6	168
6	75	5	1.87 to 3.83	77.3%	2	73
7	43	6	1.54 to 3.73	76.7%	1	42
8	40	7	1.46 to 4.44	77.5%	2	38
Total	515		1.40 to 4.44	74.8%	18	497
Mathematics						
4	131	3	1.53 to 3.85	84.7%	2	129
5	127	4	1.44 to 4.67	78.0%	9	118
6	31	5	1.81 to 4.56	77.4%	2	29
7	24	6	1.94 to 3.58	91.7%	0	24
8	35	7	1.67 to 4.17	74.3%	2	33
Total	348		1.44 to 4.67	81.0%	15	333

Note: Based on the students with End-of-Year data for 2011012, there were 863 students in grades 4-8 who received tutoring in either reading or mathematics. Of these students, 830 had relative achievement level data for 2010-11.

Characteristics of AAA Participants and Matched Comparison Groups

Among the participants of the spring 2012 AAA academy, 818 were in grades 4-8 and had achievement level data for 2010-11 (prior to AAA) and 2011-12 (after AAA). The academic outcomes of these 818 students, including 489 who received tutoring in reading and 329 participating in mathematics tutoring, will be compared in this report to the outcomes of similar non-participating students. The academic achievement levels and demographic characteristics of AAA participants and the matched comparison groups are presented in Tables 10 through 11.

Table 10 shows that the AAA groups who received reading or mathematics tutoring and their comparison group were performing similarly prior to the spring 2012 academy based on their EOG achievement levels in 2010-11. Each comparison group also mirrored the grade level distribution of the AAA reading and mathematics groups, with the exception of the breakdown at Level III. There is a greater percentage of AAA students than comparison students at low Level III in both reading and mathematics. The average reading and mathematics EOG relative achievement levels between the AAA and matched groups were examined and were similar across both subjects. The racial/ethnic and special program program compositions of the matched groups are also comparable to the AAA participant groups as shown in Table 11.

Table 10
AAA Participants and Matched Comparison Group
by Subject and EOG Achievement Levels, 2010-11

Achievement Level	Reading				Mathematics			
	AAA		Comparison		AAA		Comparison	
	n	%	n	%	n	%	n	%
Level I	76	15.5%	77	15.8%	21	6.4%	21	6.4%
Level II	278	56.8%	276	56.4%	193	58.7%	193	58.7%
Level III	132	27.0%	133	27.2%	109	33.1%	109	33.1%
3.00 to 3.29	104	21.3%	46	9.4%	88	26.7%	30	9.1%
3.33 to 3.92	28	5.7%	87	17.8%	21	6.4%	79	24.0%
Level IV	3	0.6%	3	0.6%	6	1.8%	6	1.8%
Total	489	100%	489	100%	329	100%	329	100%

Table 11
AAA Participants and Matched Comparison Group
By Subject and Demographic Characteristics, 2011-12

Race/Ethnicity	Reading				Mathematics			
	AAA		Comparison		AAA		Comparison	
	n	%	n	%	n	%	n	%
American Indian or Alaska Native	2	0.4%	2	0.4%	1	0.3%	1	0.3%
Asian or Pacific Islander	7	1.4%	7	1.4%	2	0.6%	2	0.6%
Black or African American	297	60.7%	297	60.7%	206	62.6%	206	62.6%
Hispanic or Latino	107	21.9%	107	21.9%	73	22.2%	73	22.2%
Multi-racial (two or more races)	15	3.1%	15	3.1%	10	3.0%	10	3.0%
White	61	12.5%	61	12.5%	37	11.3%	37	11.3%
Special Programs								
Economically Disadvantaged (ED)	338	69.1%	338	69.1%	246	74.8%	246	74.8%
Limited English Proficiency (LEP)	49	10.0%	49	10.0%	47	14.3%	46	14.0%
Special Education (SWD)	46	9.4%	47	9.6%	38	11.6%	36	10.9%
Academically Gifted (AG)	15	3.1%	16	3.3%	4	1.2%	4	1.2%
Gender								
Female	252	51.5%	245	50.1%	169	51.4%	166	50.5%
Male	237	48.5%	244	49.9%	160	48.6%	163	49.5%
Total	489	100%	489	100%	329	100%	329	100%

Note: Matched comparison groups were not selected based on academically gifted status or gender although the percentages within each indicator are representative of those found among AAA participants.

Site Coordinator Survey Results on Implementation

According to a survey of site coordinators conducted by D&A, the AAA site coordinators of the spring 2012 academy held a variety of school positions as shown in Table 12. About one third (33%) of the site coordinators were classroom teachers.

Table 12
Site Coordinator School Positions

	#	%
Classroom Teacher	7	33%
Other (Title I Teachers, Social Worker, Intervention Behavioral Specialist)	4	19%
Instructional Resource Teacher	3	14%
Literacy Coach	2	10%
Specialist Teacher	2	10%
Special Programs Teacher	2	10%
Guidance Counselor	1	5%
Total	21	100%

Site coordinators were asked to report on the data sources that they used to group students into tutor groups. Respondents could select as many data sources as were applicable. Site coordinators were most likely to rely on teacher recommendations to assign students to tutor groups followed closely by EOG assessment results. Typically, site coordinators relied on teacher recommendations to place third grade students and EOG assessment data to create student groups for fourth through eighth grade students.

Table 13
Data Sources Used to Create Tutor Groups

	#	%
Teacher recommendations	16	76%
End of Grade assessments	15	71%
Benchmark assessments	12	57%
Grades	10	48%
Other (AIMSweb data and EVAAS data)	8	38%
Report Cards	6	29%
Profile Cards	2	10%
Case 21 assessments	2	10%

Site coordinators were asked to indicate their level of agreement to a variety of statements as referenced in Table 14. A summary of their results by topic is provided below.

Engagement and Attendance: According to site coordinators, tutors and students seemed to be engaged in the instruction. Each of the respondents agreed that students were engaged in the instruction and that tutors were using the instructional materials. Site coordinators reported slightly less favorable results for attendance with 67% agreeing that students were rarely absent from tutoring sessions. Most (81%) agreed that tutors were present to lead academy sessions.

Satisfaction: Respondents appear to be satisfied with AAA. Nearly all respondents (95%) would recommend AAA to other schools and the vast majority (81%) would consider being a site coordinator again.

Support: According to the survey responses, site coordinators felt supported in their efforts. Nearly all (90%) thought that Central Office staff provided useful data and offered support. Whereas 85% of respondents believe that their school's administration provided the support needed to coordinate AAA, this percentage is lower than the survey results from the spring 2011 academy in which 100% of site coordinator respondents agreed with this statement.

Materials and Training: The survey results show dramatic improvements in the site coordinators' views of the materials and training used in the spring 2012 academy compared to survey results from the spring 2011 academy. Nearly all (90%) site coordinators who completed the survey in 2011-12 thought that the instructional materials met the needs of the students (compared to only 38% in 2010-11); however, the materials didn't always meet the needs of the tutors. Slightly more than three fourths (77%) of site coordinators stated that the 2011-12 launch training session prepared them to assist their tutors in using the materials, whereas only slightly more than half (53%) of site coordinators felt the same in 2010-11.

Table 14
Level of Agreement with Various Aspects of AAA Implementation

	Strongly Agree (SA)	Agree (A)	SA+A	Disagree (D)	Strongly Disagree (SD)
Engagement and Attendance					
Students appeared to be engaged in the instruction.	48%	52%	100%	0%	0%
Tutors seemed to be using the instructional materials.	62%	38%	100%	0%	0%
Tutors were consistently present to lead tutoring groups.	24%	57%	81%	14%	5%
Students were rarely absent from tutoring sessions.	5%	62%	67%	24%	10%
Satisfaction					
I would recommend the AAA program to other schools.	57%	38%	95%	5%	0%
I would consider being a AAA site coordinator during the 2012-13 school year.	48%	33%	81%	19%	0%
Support					
The student rosters provided by Data and Accountability were useful for selecting AAA participants.	43%	47%	90%	10%	0%
Central Office staff was supportive of my efforts to coordinate AAA at my school.	33%	57%	90%	10%	0%
My school's administration provided the support I needed to coordinate AAA in my school.	52%	33%	85%	14%	0%
Materials and Training					
The selected instructional materials met the needs of the students.	10%	80%	90%	10%	0%
The selected instructional materials met the needs of the tutors.	10%	67%	77%	24%	0%
The launch training session effectively prepared me to assist the tutors at my site in using the instructional materials.	10%	67%	77%	24%	0%

The survey concluded with two qualitative questions. Site coordinators were invited to share their thoughts on what they considered to be the most effective aspect of AAA and to provide their input on ways to make the program more effective. Three themes emerged from the generated input from site coordinators as well as three common suggestions for improving AAA. As shown in Table 15, the materials selected for the spring 2012 academy were viewed as both a most effective aspect and an area in need of improvement.

Table 15
Qualitative Input on Program Effectiveness and Areas of Improvement

Most Effective Aspects	Areas of Improvement
<p>Tutor Quality: Site coordinators were quick to praise the tutors for their hard work and consistency as well as the quality of instruction they provided to their students.</p>	<p>Substitutes: Site coordinators were responsible for substituting for absent tutors. They believe that this expectation is too great given the other duties they must perform. Site coordinators would like there to be a list of readily available tutor substitutes in the event that they are needed when a tutor is ill or must attend to an emergency.</p>
<p>Effective Materials: Many site coordinators mentioned the high quality materials and effective curriculum that were used to provide reading and mathematics instruction.</p>	<p>Materials: Many site coordinators mentioned that improvements need to be made to the materials. Suggestions included using materials that offer pre and post assessments as well as interim benchmarks, using materials that were more scripted, and using materials that were more aligned with our district standards and EOG assessments and required less “tweaking”.</p>
<p>Small Group Size: The low tutor to student ratio which yielded small tutoring groups was seen by site coordinators to be very effective.</p>	<p>Academy Schedule: Several site coordinators wished that the academy had started earlier in the school year and met once a week for 20 weeks instead of twice a week for 10 weeks.</p>

Student Academic Outcomes

The examination of academic performance based on EOG achievement levels before and after participation in AAA is conducted on 4th-8th grade-students, including 489 students who received tutoring in reading and their comparison group and 329 students who received mathematics tutoring and their comparison group. In addition, the percentages of AAA participants and comparison group students who met their reading and mathematics targets for 2011-12 are also investigated.

Reading Achievement

Table 16 presents the change within each group's reading EOG achievement levels between 2010-11 and 2011-12 and compares the degree of that change within and between groups. In 2010-11, a higher percentage of AAA students than comparison students fell within the low Level III range. Overall, AAA and comparison students were somewhat more likely to score at grade level in 2011-12. The change in reading EOG achievement levels was more positive for students in the comparison group than for AAA participants.

- Several statistically significant differences in where students fell along the range of EOG achievement levels were found. The percentage of comparison students who scored at Level II dropped 16.9 percentage points between 2010-11 and 2011-12, whereas the percentage of Level III and IV students rose by 14.3 and 4.3 percentage points. Thus, a larger proportion of these students were proficient in reading in 2011-12 than the previous year. The positive change at Level III occurred primarily at low Level III (3.0 to 3.29).
- A similar trend of smaller yet statistically significant differences was apparent among the AAA participants. There was an 11.9 percentage point decline in students who scored at Level II. The percentage of Level III students increased by 9.8 percentage points and almost all of this improvement occurred at high Level III (3.3 and above).
- Considering 2011-12 data only, the percentage of AAA participants who received a Level II on the reading EOG in 2011-12 was statistically higher than the comparison group (45% and 39.5%). Conversely, the percentage of comparison students who scored within Level IV was statistically higher than the AAA students (4.9% and 1.2%).

Table 16
AAA Participants and Matched Comparison Group
Difference in Reading EOG Achievement Levels, 2010-11 and 2011-12 (N=489)

	2010-11		2011-12		Difference
	n	%	n	%	
AAA Participants					
Level I	76	15.5%	83	17.0%	1.5%
Level II	278	56.9%	220	45.0%	-11.9%*
Level III	132	27.0%	180	36.8%	9.8%*
3.00 to 3.29	104	21.3%	109	22.3%	1.0%
3.33 to 3.92	28	5.7%	71	14.5%	8.8%*
Level IV	3	0.6%	6	1.2%	0.6%
Comparison Group					
Level I	77	15.8%	69	14.1%	-1.7%
Level II	276	56.4%	193	39.5%	-16.9%*
Level III	133	27.2%	203	41.5%	14.3%*
3.00 to 3.29	46	9.4%	111	22.7%	13.3%*
3.33 to 3.92	87	17.8%	92	18.8%	1.0%
Level IV	3	0.6%	24	4.9%	4.3%*

Note: * indicates a statistically significant difference across years and within groups based on a z statistic test for proportions. Bold indicates a statistically higher proportion of students within that Level when compared between groups.

The results presented in Table 16 help to substantiate the finding that although AAA participants may have improved their reading proficiency, greater gains occurred among the students who did not participate in AAA. Table 17 follows students' transitions within achievement levels based on their reading EOG performance in 2010-11 and 2011-12. The bold cells on the diagonal indicate the percentage of students who scored within the same level. Of particular interest are the italicized cells above the diagonal which show the percentage of students who scored within a higher level in 2011-12. Again, reading results are more positive for the comparison students.

- The largest percentages of students within each group are located on the diagonal, especially at Level III where the majority of students remained since 2010-11.
- The cells above the diagonal show a respectable amount of improvement between 2010-11 and 2011-12 among both groups, especially the comparison students.
- The AAA program specifically targeted students at a Level II in 2010-11 and 32.7% of those students scored proficient on the reading EOG in 2011-12. Comparatively, a greater percentage of students who did not receive reading tutoring from AAA made this transition (40.2%).

Table 17
AAA Participants and Matched Comparison Group
Transition Matrix for Reading EOG Achievement Levels, 2010-11 and 2011-12

2010-11	2011-12				
	Level I	Level II	Level III	Level IV	Total % and n
AAA Participants					
Level I	47.4%	<i>40.8%</i>	<i>11.8%</i>	0%	15.5% (76)
Level II	14.4%	52.9%	<i>32.4%</i>	<i>0.3%</i>	56.9% (278)
Level III	5.3%	31.1%	59.8%	3.8%	27.0% (132)
Level IV	0%	33.3%	66.7%	0%	0.6% (3)
Total % and n	17.0% (83)	45.0% (220)	36.8% (180)	1.2% (6)	100% (489)
Comparison Group					
Level I	41.6%	<i>44.1%</i>	<i>14.3%</i>	0%	15.8% (77)
Level II	12.3%	47.5%	<i>39.1%</i>	<i>1.1%</i>	56.4% (276)
Level III	2.3%	21.0%	62.4%	<i>14.3%</i>	27.2% (133)
Level IV	0%	0%	33.3%	66.7%	0.6% (3)
Total % and n	14.1% (69)	39.5% (193)	41.5% (203)	4.9% (24)	100% (489)

Note: Bold indicates same achievement level in 2010-11 and 2011-12. Italics indicates a higher achievement level in 2011-12.

Mathematics Achievement

Results from the same analysis of AAA students who received mathematics tutoring and their matched comparison group are presented in Tables 18 and 19. In 2010-11, a higher percentage of AAA students than comparison students fell within the low Level III range. Overall, AAA and comparison students were more likely to score at grade level in 2011-12. Unlike the trend in reading, the change in mathematics EOG achievement levels was more positive for students who received AAA tutoring in mathematics than those who did not.

- There were statistically significant differences in the percentages of students within both groups who scored within Levels II and III between 2010-11 and 2011-12, although those differences are more positive for AAA participants. It is these students who were primarily targeted for the AAA intervention.
- Among the AAA group, the percentage of Level III students increased by 19.8 percentage points. Improvements among high Level III students (3.3 and above) accounted for this impact. There was a 15.8 percentage point increase for the comparison group. The positive change at Level III occurred primarily at low Level III (3.0 to 3.29).
- The comparison group had a statistically higher percentage of students at Level IV in 2011-12 than the AAA group.

Table 18
AAA Participants and Matched Comparison Group
Difference in Mathematics EOG Achievement Levels, 2010-11 and 2011-12 (N=329)

	2010-11		2011-12		Difference
	n	%	n	%	
AAA Participants					
Level I	21	6.4%	30	9.1%	2.7%
Level II	193	58.7%	114	34.7%	-25.0%*
Level III	109	33.1%	174	52.9%	19.8%*
3.00 to 3.29	88	26.7%	96	29.2%	2.5%
3.33 to 3.92	21	6.4%	78	23.7%	17.3%*
Level IV	6	1.8%	11	3.3%	1.5%
Comparison Group					
Level I	21	6.4%	27	8.2%	1.8%
Level II	193	58.7%	120	36.5%	-22.2%*
Level III	109	33.1%	161	48.9%	15.8%*
3.00 to 3.29	30	9.1%	69	21.0%	11.9%*
3.33 to 3.92	79	24.0%	92	27.9%	3.9%
Level IV	6	1.8%	21	6.4%	4.6%*

Note: * indicates a statistically significant difference across years and within groups based on a z statistic test for proportions. Bold indicates a statistically higher proportion of students within that Level when compared between groups.

The results presented in Table 19 support the finding that AAA participants had greater gains in their mathematics proficiency than non-participants at Levels II and III. At the targeted levels, among AAA students who fell within a Level II on the mathematics EOG in 2010-11, 44.5% of those students were proficient in 2011-12 compared to 39.9% of comparison students. AAA students at Level III prior to receiving tutoring were also slightly more likely to remain at that level, although the comparison students were more likely to advance to Level IV.

Table 19
AAA Participants and Matched Comparison Group
Transition Matrix for Mathematics EOG Achievement Level, 2010-11 and 2011-12

2010-11	2011-12				
	Level I	Level II	Level III	Level IV	Total % and n
AAA Participants					
Level I	28.6%	<i>52.4%</i>	<i>19.0%</i>	0%	6.4% (21)
Level II	11.9%	43.5%	<i>43.5%</i>	<i>1.0%</i>	58.7% (193)
Level III	0.9%	17.4%	76.2%	<i>5.5%</i>	33.1% (109)
Level IV	0%	0%	50.0%	50.0%	1.8% (6)
Total % and n	9.1% (30)	34.7% (114)	52.9% (174)	3.3% (11)	100% (329)
Comparison Group					
Level I	14.3%	<i>71.4%</i>	<i>14.3%</i>	0%	6.4% (21)
Level II	12.4%	47.7%	<i>39.9%</i>	0%	58.7% (193)
Level III	0%	11.9%	71.6%	<i>16.5%</i>	33.1% (109)
Level IV	0%	0%	50.0%	50.0%	1.8% (6)
Total % and n	8.2% (27)	36.5% (120)	48.9% (161)	6.4% (21)	100% (329)

Note: Bold indicates same achievement level in 2010-11 and 2011-12. Italics indicates a higher achievement level in 2011-12. Includes students with both 2010-11 and 2011-12 data.

Academic Growth in Reading and Mathematics

Table 20 shows the percentages of students who met their reading growth targets for 2011-12. The results are presented for AAA participants who received reading tutoring and their comparison group and are disaggregated by reading EOG achievement level. Little difference was found between the percentages of the students who received reading tutoring and met growth compared to those students who did not participate in AAA and met growth. None of the differences are statistically significant.

- As previously discussed, AAA primarily targeted students whose achievement levels were within the range of 2.0 to 3.3. Less than half of the Level II students in each group met their reading growth targets. A greater proportion of students with achievement levels between 3.0 and 3.29 reached growth (three fourths of students within each group), although higher range Level III (3.33 to 3.92) students were even more successful.
- The percentages of AAA students and their matched group who met reading growth were higher than all elementary and middle school students districtwide at every achievement level.

Table 20
AAA Participants and Matched Comparison Group
Who Met Reading Growth Targets by Reading EOG Achievement Level, 2011-12

2011-12 Achievement Level	AAA Students Met Growth		Comparison Students Met Growth		Difference in %
	#	%	#	%	
Level I	16	19.3%	11	15.9%	3.4%
Level II	99	45.0%	84	43.5%	1.5%
Level III	150	83.3%	166	81.8%	1.5%
3.00 to 3.29	83	76.1%	83	75.5%	0.6%
3.33 to 3.92	67	94.4%	83	89.2%	5.2%
Level IV	6	100%	23	95.8%	4.2%
Total	271	55.4%	284	58.1%	-2.7%

Note: No differences are statistically significant based on a z statistic test for proportions.

Table 21
Reading Growth Targets Met Districtwide, 2011-12

2011-12 Achievement Level	WCPSS Elementary Schools Grades 3-5	WCPSS Middle Schools Grades 6-8
Levels I & II	55%	55%
Level III	62%	59%
Level IV	57%	54%
Total	59%	57%

There are higher percentages of all AAA students who reached growth in mathematics (67.8%) compared to reading (55.4%) Overall, the proportions of AAA students by EOG achievement level who received mathematics tutoring and who met their mathematics growth targets are similar to the comparison students. The only statistically significant difference is found among Level III students.

- It appears that the performance of the higher Level III students (3.31 to 3.92) contributes to most of this positive change. The percentage of AAA participants with achievement levels between 3.31 and 3.92 on the mathematics EOG in 2011-12 who made growth was statistically higher than the comparison group (96.6% and 85.7%). There was also a difference of almost 10 percentage points between the percentage of AAA students and their matched counterparts at lower Level III who made growth, yet this difference was not significant.
- The percentages of AAA students and their matched group who were proficient in mathematics and met their growth targets were higher than all elementary and middle school students districtwide.

Table 22
AAA Participants and Matched Comparison Group
Who Met Mathematics Growth Targets by Mathematics EOG Achievement Level, 2011-12

2011-12 Achievement Level	AAA Students Met Growth		Comparison Students Met Growth		Difference in %
	#	%	#	%	
Level I	2	6.7%	1	3.7%	3.0%
Level II	52	45.6%	61	50.8%	-5.2%
Level III	159	91.4%	132	82.0%	9.4%*
3.00 to 3.27	74	86.0%	48	76.2%	9.8%
3.31 to 3.92	85	96.6%	84	85.7%	10.9%*
Level IV	10	90.9%	20	95.2%	-4.3%
Total	223	67.8%	214	65.1%	2.7%

Note: * indicates a statistically significant difference based on a z statistic test for proportions.

Table 23
Mathematics Growth Targets Met Districtwide, 2011-12

2011-12 Achievement Level	WCPSS Elementary Schools Grades 3-5	WCPSS Middle Schools Grades 6-8
Levels I & II	62%	59%
Level III	71%	60%
Level IV	73%	61%
Total	71%	60%

Table 24 presents the percentage of students who met their growth targets by grade level and subject. Again, there is little evidence of a positive impact of AAA on students' academic growth. Overall, the difference in proportions reaching growth is minimal between groups and only two instances of significance are found.

The comparison group had a statistically higher percentage of 6th-grade students meeting their reading growth targets than the 6th-grade students who received reading tutoring (56.9% compared to 41.7%). Shifting attention to mathematics, slightly more than three fourths of AAA students in grade 5 met growth in 2011-12, resulting in a statistically significant difference of 13.1 percentage points more than 5th-grade comparison group students.

Table 24
AAA Participants and Matched Comparison Group
Who Met Reading or Mathematics Growth Targets by Grade Level, 2011-12

2011-12 Grade Level	AAA Students Met Growth		Comparison Students Met Growth		Difference in %
	#	%	#	%	
Reading					
4	89	51.2%	96	55.2%	-4.0%
5	103	62.4%	98	59.4%	3.0%
6	30	41.7%	41	56.9%	-15.2%*
7	25	61.0%	22	53.7%	7.3%
8	24	64.9%	27	73.0%	-8.1%
Total	271	55.4%	284	58.1%	-2.7%
Mathematics					
4	88	68.2%	89	69.0%	-0.8%
5	90	78.3%	75	65.2%	13.1%*
6	13	46.4%	16	57.1%	-10.7%
7	9	37.5%	12	50.0%	-12.5%
8	23	69.7%	22	66.7%	3.0%
Total	223	67.8%	214	65.1%	2.7%

Note: * indicates a statistically significant difference based on a z statistic test for proportions.

Academic growth results by subgroup are displayed in Tables 25 and 26 for AAA participants and their comparison groups.

- In most cases, the majority of students in each group met their reading growth targets. The AAA students had slightly higher percentages of students meeting growth than comparison students within three subgroup categories; Hispanic/Latino, LEP, and special education, although these difference were not statistically significant.
- Compared to reading outcomes, greater proportions of the student subgroups within each analytic group met their mathematics growth targets. Among almost all subgroups, it was slightly more common for AAA students who received mathematics tutoring to have met growth than the comparison students. None of the differences were statistically significant.

Table 25
AAA Participants and Matched Comparison Group
Who Met Reading Growth Targets by Demographic Characteristics, 2011-12

Race/Ethnicity	AAA Students Met Growth		Comparison Students Met Growth		Difference in %
	#	%	#	%	
American Indian or Alaska Native	ns	ns	ns	ns	ns
Asian or Pacific Islander	ns	ns	ns	ns	ns
Black or African American	166	55.9%	168	56.6%	-0.7%
Hispanic or Latino	60	56.1%	57	53.3%	2.8%
Multi-racial (two or more races)	8	53.3%	12	80.0%	-26.7%
White	33	54.1%	40	65.6%	-11.5%
Special Programs					
Free or Reduced-Price Lunch	189	55.9%	190	56.2%	-0.3%
Limited English Proficiency	31	63.3%	26	53.1%	10.2%
Special Education	28	60.0%	24	53.3%	6.7%
Academically Gifted	7	46.7%	10	71.4%	-24.7%
Gender					
Female	146	57.9%	149	60.8%	-2.9%
Male	125	52.7%	135	55.3%	-2.6%

Note: No differences are statistically significant based on a z statistic test for proportions. Growth data for subgroups with 5 or fewer students are not shown (ns). Students may be counted in more than one special program.

Table 26
AAA Participants and Matched Comparison Group
Who Met Mathematics Growth Targets by Demographic Characteristics, 2011-12

	AAA Students Met Growth		Comparison Students Met Growth		Difference in %
	#	%	#	%	
Race/Ethnicity					
American Indian or Alaska Native	ns	ns	ns	ns	ns
Asian or Pacific Islander	ns	ns	ns	ns	ns
Black or African American	136	66.0%	135	65.5%	0.5%
Hispanic or Latino	52	71.2%	48	65.8%	5.4%
Multi-racial (two or more races)	7	70.0%	7	70.0%	0.0%
White	26	70.3%	21	56.8%	13.5%
Special Programs					
Free or Reduced-Price Lunch	165	69.9%	155	63.0%	6.9%
Limited English Proficiency	33	70.2%	29	63.0%	7.2%
Special Education	23	60.5%	21	58.3%	2.2%
Academically Gifted	ns	ns	ns	ns	ns
Gender					
Female	118	69.8%	109	65.7%	4.1%
Male	105	65.6%	105	64.4%	1.2%

Note: No differences are statistically significant based on a z statistic test for proportions. Growth data for subgroups with fewer than 5 students are not shown (ns). Students may be counted in more than one special program.

School Level Academic Outcomes

Academic Outcomes of AAA Participants by School

AAA participants' reading and mathematics EOG proficiency and growth data are presented by school in Tables 27 and 28. These data allow comparisons to be made across schools that implemented AAA in the spring of 2012. Fewer than half of the schools experienced gains in the percentage of students who scored proficient after receiving tutoring. Yet there appears to be a positive relationship between proficiency and growth, as the schools that showed the greatest improvement in AAA student proficiency tend to have the highest percentages of AAA students meeting growth.

- Among the 20 participating schools, 17 offered tutoring in reading. Based on EOG results for 2010-11 and 2011-12, there were three schools that had significant improvements in the percentage of their AAA participants who were proficient in reading following the tutoring they received, as shown in Table 27. These schools are Conn and Walnut Creek Elementary and Carroll Middle. Barwell Road, Jeffrey's Grove, and Lynn Road Elementary and River Oaks Middle also had notable, but non-statistically significant gains in reading proficiency among their AAA students.
- At 12 of the 17 schools, more than half of the AAA students met their reading growth targets for 2011-12. Five of the schools had at least 65% of their AAA students making reading growth, and these schools also had the greatest rise in student proficiency (Barwell Road, Conn, Jeffrey's Grove, and Walnut Creek Elementary and River Oaks Middle).
- Fifteen of the schools offered tutoring in mathematics during the spring 2012 academy. Two of the schools, Walnut Creek¹ and Wilburn Elementary Schools, had significant increases in the percentage of students who scored proficient on the mathematics EOG after they received tutoring. Many of the same schools that showed improvement in reading also had notable but non-statistically significant gains in AAA students' mathematics proficiency (Barwell Road², Bugg, and Lynn Road Elementary and River Oaks Middle).
- More than half of AAA students met their mathematics growth targets for 2011-12 at 12 of the 15 schools. At least 75% of the AAA students made growth in mathematics at 7 of the schools that in most cases also had notable improvements in proficiency (Barwell Road, Bugg, Jeffrey's Grove, Lynn Road, Stough, Walnut Creek, and Wilburn Elementary Schools).

¹ Walnut Creek had multiple reading and mathematics interventions in place for the 2011-12 school year and it is unknown whether students might have received those supports in addition to AAA.

² Barwell Road, Brentwood, Creech Road, and Wilburn were Renaissance Schools in 2011-12 and were provided extra resources specifically related to technology, professional development, additional staff, a signing bonus for most staff, and a performance bonus plan rewarding growth in student performance, with the goal of increasing student performance at these low performing schools (Lenard et al., 2012).

Table 27
AAA Schools
Reading EOG Proficiency and Growth Data (N=20)

School	Number of Students	Proficiency 2010-11	Proficiency 2011-12	Difference in Proficiency	% Meeting Growth Targets 2011-12
<i>Barwell Road Elementary Year Round</i>	24	16.7%	37.5%	20.8%	70.8%
<i>Brentwood Magnet Elementary</i>	42	35.7%	40.5%	4.8%	52.4%
Bugg Magnet Elementary	35	45.7%	45.7%	0.0%	57.1%
Conn Magnet Elementary	19	42.1%	79.0%	36.9%*	68.4%
<i>Creech Road Elementary</i>	nd	nd	nd	nd	nd
<i>Fox Road Elementary</i>	nd	nd	nd	nd	nd
<i>Hodge Road Elementary Year Round</i>	38	23.7%	36.8%	13.1%	63.2%
Jeffreys Grove Elementary	21	28.6%	52.4%	23.8%	71.4%
Knightdale Elementary	31	22.6%	41.9%	19.3%	45.2%
<i>Lincoln Heights Elementary</i>	17	47.1%	47.1%	0.0%	52.9%
<i>Lynn Road Elementary</i>	9	0%	22.2%	22.2%	33.3%
<i>Poe Magnet Elementary</i>	18	44.4%	33.3%	-11.1%	50.0%
Stough Elementary	11	36.4%	36.4%	0.0%	36.4%
Walnut Creek Elementary	27	22.2%	48.2%	26.0%*	66.7%
<i>Wilburn Elementary Year Round</i>	48	8.3%	18.8%	10.5%	52.1%
<i>Carroll Middle</i>	65	16.9%	33.9%	17.0%*	49.2%
<i>East Garner Magnet Middle</i>	nd	nd	nd	nd	nd
<i>East Millbrook Magnet Middle</i>	47	34.0%	23.4%	-10.6%	51.1%
<i>Moore Square Magnet Middle</i>	30	36.7%	40.0%	3.3%	53.3%
River Oaks Alternative Middle	7	28.6%	57.1%	28.5%	85.7%
Total	489				

Note: Bold schools are first year AAA schools. Italics indicate Renaissance Schools. Creech Road and Fox Road Elementary and East Garner Middle Schools did not offer reading tutoring and therefore have no data (nd). Walnut Creek opened in 2011-12, so the students it served in AAA that year attended other elementary schools in 2010-11. * indicates a statistically significant difference based on a z statistic test for proportions.

Table 28
AAA Schools
Mathematics EOG Proficiency and Growth Data (N=20)

School	Number of Students	Proficiency 2010-11	Proficiency 2011-12	Difference in Proficiency	% Meeting Growth Targets 2011-12
<i>Barwell Road Elementary Year Round</i>	9	22.2%	55.6%	33.4%	77.8%
<i>Brentwood Magnet Elementary</i>	nd	nd	nd	nd	nd
Bugg Magnet Elementary	5	20.0%	60.0%	40.0%	100%
Conn Magnet Elementary	nd	nd	nd	nd	nd
<i>Creech Road Elementary</i>	31	51.6%	71.0%	19.4%	71.0%
Fox Road Elementary	25	32.0%	48.0%	16.0%	60.0%
Hodge Road Elementary Year Round	30	43.3%	50.0%	6.7%	50.0%
Jeffreys Grove Elementary	22	68.2%	81.8%	13.6%	90.9%
Knightdale Elementary	nd	nd	nd	nd	nd
Lincoln Heights Elementary	28	35.7%	53.6%	17.9%	53.6%
Lynn Road Elementary	9	33.3%	55.6%	22.3%	77.8%
Poe Magnet Elementary	nd	nd	nd	nd	nd
Stough Elementary	16	50.0%	75.0%	25.0%	75.0%
Walnut Creek Elementary	33	27.3%	75.8%	48.5%*	87.9%
<i>Wilburn Elementary Year Round</i>	37	27.0%	62.2%	35.2%*	83.8%
Carroll Middle	nd	nd	nd	nd	nd
East Garner Magnet Middle	32	15.6%	34.4%	18.8%	65.6%
East Millbrook Magnet Middle	18	33.3%	27.8%	-5.5%	50.0%
Moore Square Magnet Middle	25	36.0%	48.0%	12.0%	36.0%
River Oaks Alternative Middle	9	0%	22.2%	22.2%	66.7%
Total	329				

Note: Bold schools are first year AAA schools. Italics indicate Renaissance Schools. Brentwood, Conn, Knightdale, and Poe Elementary and Carroll Middle Schools did not offer mathematics tutoring and therefore have no data (nd). Walnut Creek opened in 2011-12, so the students it served in AAA that year attended other elementary schools in 2010-11. * indicates a statistically significant difference based on a z statistic test for proportions.

AAA School Performance Composites

Table 29 shows the ABCs performance composites for all schools participating in AAA. Eight of the 20 schools (40%) had at least a 70% performance composite by 2011-12. More than half of the schools that held a spring 2012 academy also participated in the spring of 2011. These 13 second-year schools had performance composites below 70% in 2009-10 and did not reach 70% after their first year of implementation in 2010-11. Thus, they were invited to offer AAA at their schools in 2011-12.

- After a second year of participating in AAA, four of the 13 schools, Barwell Road and Poe Elementary and East Garner and Moore Square Middle, had performance composites slightly over 70%, representing a statistically significant improvement compared to 2009-10 and 2010-11.
- Compared to 2009-10, the year prior to AAA implementation, Brentwood, Lynn Road, and Wilburn Elementary also experienced a significant increase over time, although their performance composites did not reach 70%. Conversely, Carroll Middle School experienced a significant decline.
- By 2011-12, four of the first year schools had restored their performance composite to at least 70%, which was a significant increase for Bugg, Conn, and Jeffreys Grove Elementary Schools. River Oaks Middle's performance composite represented a significant drop between 2010-11 and 2011-12.

Table 29
AAA Schools by Year of Participation
ABCs Performance Composites, 2009-10, 2010-11, 2011-12 (N=20)

School	2009-10 ABCs Performance Composite	2010-11 ABCs Performance Composite	2011-12 ABCs Performance Composite	Difference 2009-10 to 2011-12	Difference 2010-11 to 2011-12
Second Year Schools (Spring 2011 and Spring 2012) n=13					
<i>Barwell Road Elementary Year Round</i>	53.0%	64.4%	74.1%	<i>21.1*</i>	<i>9.7*</i>
<i>Brentwood Magnet Elementary</i>	56.1%	61.0%	64.1%	<i>8.0*</i>	3.1
<i>Creech Road Elementary</i>	53.9%	57.1%	58.1%	4.2	1.0
Fox Road Elementary	63.0%	68.9%	66.5%	3.5	-2.4
Hodge Road Elementary Year Round	64.8%	62.5%	64.1%	-0.7	1.6
Lincoln Heights Elementary	69.0%	67.7%	68.0%	-1.0	0.3
Lynn Road Elementary	61.2%	68.3%	66.1%	<i>4.9*</i>	-2.2
Poe Magnet Elementary	60.5%	68.3%	74.0%	<i>13.6*</i>	<i>5.7*</i>
<i>Wilburn Elementary Year Round</i>	53.9%	58.7%	66.4%	<i>12.5*</i>	<i>7.7*</i>
Carroll Middle	69.3%	64.1%	63.6%	<i>-5.7*</i>	-0.5
East Garner Middle	67.7%	69.6%	71.8%	<i>4.1*</i>	<i>2.2*</i>
East Millbrook Magnet Middle	66.0%	64.8%	65.3%	-0.7	0.5
Moore Square Magnet Middle	62.2%	69.8%	73.0%	<i>10.8*</i>	<i>3.2*</i>
First Year Schools (Spring 2012) n=7					
Bugg Magnet Elementary	75.7%	63.1%	70.6%		<i>7.5*</i>
Conn Magnet Elementary	71.5%	69.6%	75.9%		<i>6.3*</i>
Jeffreys Grove Elementary	72.7%	66.8%	83.3%		<i>16.5*</i>
Knightdale Elementary	70.4%	69.3%	69.7%		0.4
Stough Elementary	70.9%	68.3%	72.5%		4.2
Walnut Creek Elementary	NA	NA	60.3%		NA
River Oaks Alternative Middle	53.1%	67.3%	57.8%		<i>-9.5*</i>

Note: Bold performance composites for 2011-12 indicate those above 70.0%. Italics indicate Renaissance Schools. * indicates a statistically significant difference based on a z statistic test for proportions. Positive and significant improvements are in italics. Difference between 2009-10 and 2011-12 are not shown for first year schools because 2010-11 was the year prior to AAA implementation.

Additional Analyses of Outcomes

Several questions arose during this evaluation that led to additional analyses of academic outcomes.

- Third grade students who participated in AAA during the 2011-12 school year were not included in the previous student and school-level analyses because they lack prior EOG proficiency and growth target data, due to the nature of the state assessments,. Their performance on the EOG after they received AAA tutoring is still of interest and is examined here.
- The second set of analyses investigates whether students who receive higher doses of tutoring have more positive academic outcomes than students with lower doses. First, the tutoring dosage that students received is examined based on the number of tutoring sessions that students attended during the spring 2012 academy. Next, the academic outcomes of students who received AAA tutoring in the same subject in two doses (during the spring 2011 and 2012 academies) are compared to students who received one dose of tutoring in the spring 2012 academy.
- Next is an analysis of the probability that students would meet their growth targets by the end on the 2011-12 school year. Logistic regression models are applied to the sample of students who received reading or mathematics tutoring in the spring 2012 academy and their comparisons groups.
- The final analysis explores the extent to which students from the AAA spring 2011 academy cohort reached proficiency by the end of the 2011-12 school year. In this case, three-year reading and mathematics proficiency trend data for the spring 2011 academy cohort are examined to assess whether this group of students had reached proficiency.

Grade 3 EOG Proficiency

During the AAA 2012 academy, 192 students in grade 3 received tutoring in reading and 111 students were tutored in mathematics. Soon after the 11 week academy, the students took the EOG assessments. These students were likely selected for AAA participation based on other assessment and achievement data sources which may have indicated below grade-level performance.

EOG data for 2011-12 indicate that 3rd-grade students performed better in mathematics than reading. Among the students who were tutored in reading, about one-third comprised Levels I, II, and III, respectively. As such, 35% of the students were reading proficient by the end of the year. A larger percentage of mathematics tutor recipients were proficient (56%) as shown in Table 30.

Table 30
Grade 3 AAA Participants
EOG Achievement Level, 2011-12

2011-12 Achievement Level	Reading		Mathematics	
	#	%	#	%
Level I	58	30.2%	6	5.4%
Level II	67	34.9%	43	38.7%
Level III	62	32.3%	57	51.4%
Level IV	5	2.6%	5	4.5%
Total	192	100%	111	100%

Tutoring Dosage

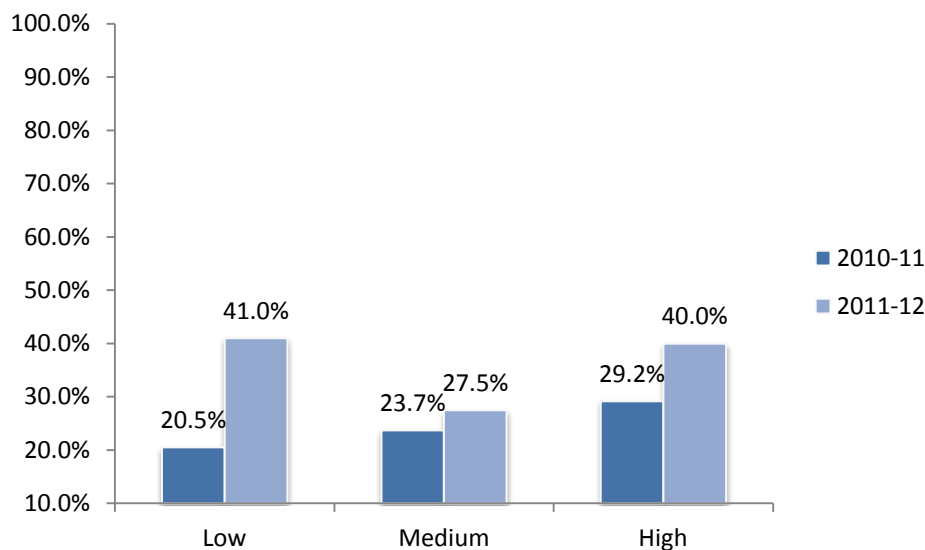
AAA Attendance

One question that surfaced during this evaluation was whether the tutoring dosage based on students' attendance at the tutoring sessions would make any difference in the reading or mathematics outcomes that they were expected to gain by the end of the spring 2012 academy. To investigate this question, students in grades 4-8 who received reading tutoring were separated into three groups based on their attendance. The groups' proficiency rates were then compared. The same procedure was used for those students tutored in mathematics. Students with attendance rates lower than 50% (2 to 9 sessions) are labeled the "low attendance group," students with rates between 50-70% (10 to 14 sessions) comprise the "medium attendance group," and students who attended the academy at least 75% of the time (15 or more sessions) are called the "high attendance group." Group assignments are based on attendance data presented in Table 5. It showed the most students fell into the high attendance group.

It was expected that after the spring 2012 academy, students with high attendance would have higher reading and mathematics proficiency rates than the middle and low attendance groups. The results, as shown in Figures 2 through 4, indicate that high attendance did not make a difference in EOG proficiency or growth outcomes for 2011-12.

- Students in the low attending group who received tutoring in reading from AAA started out with slightly lower reading proficiency levels than higher attending students prior to the academy (2010-11). Students who were tutored in mathematics had similar pre-AAA mathematics proficiency levels across the attendance groups. By 2011-12, the percentages of low attending students who were proficient in reading or mathematics were roughly equivalent to those found among high attending students, although low attending students had the largest gains in proficiency.
- The one-year reading and mathematics proficiency gains made by both low and high attending students are statistically significant.
- The percentages of students meeting their reading or mathematics growth targets in 2011-12 are also similar among low and high attendance groups, as shown in Figure 4.
- Students who attended 10-14 sessions (the medium attendance group) had the lowest academic outcomes and the smallest gains in proficiency.

Figure 2
Reading Proficiency Before and After AAA by Students' Tutoring Attendance (n=489)



Interpretation Example: Before receiving reading tutoring from AAA (in 2010-11), 20.5% of the low attending students were proficient in reading. This percentage increased to 41.0% in 2011-12, after their participation in AAA.

Figure 3
Mathematics Proficiency Before and After AAA by Students' Tutoring Attendance (n=329)

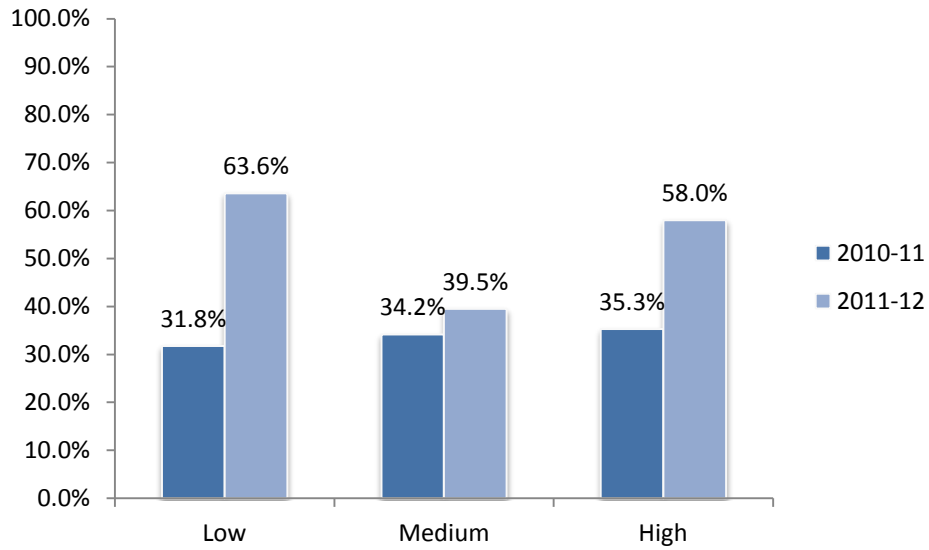
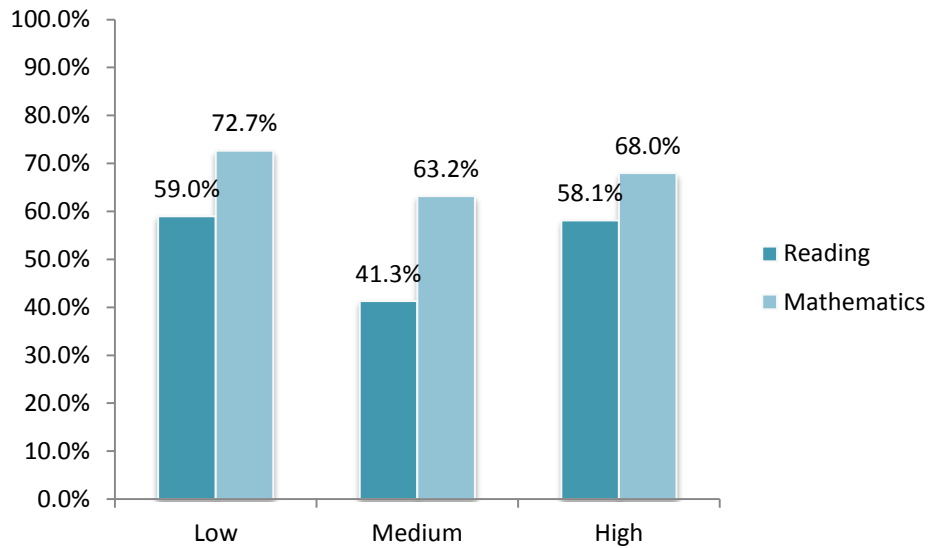


Figure 4
Reading and Mathematics Growth for 2011-12 by Students' AAA Attendance



AAA Tutoring: Two Years Compared to One Year

In 2010-11, AAA served 1,357 students, and 1,185 students were served in 2011-12. A small percentage (14.1%) of the students served by AAA in 2010-11 was also served in 2011-12. Of the students who participated in AAA for two years, 104 were served in the same subject, as shown in Table 31. Restricting the analysis to students in grades 4-8, the academic outcomes of students who received tutoring in both the spring 2011 and 2012 academies are compared to the students who received tutoring in the spring 2012 academy only. The purpose was to evaluate whether a double dose of the AAA intervention positively impacts proficiency and growth more than a single dose.

Table 31
Spring 2012 AAA Participants by Years of Reading or Mathematics Tutoring Received

Year of AAA Tutoring Received in the Same Subject	Reading	Mathematics	Total
One year (Spring 2012)	645	418	1,063
Two years (Spring 2011 and 2012)	63	41	104
	708	459	1,167

EOG proficiency and growth data shown in Figures 5 through 7 suggest that overall students who participated in both AAA academies and received tutoring in the same subject did not have considerably better end of year outcomes than students who were first year participants in 2011-12. A second dosage of reading tutoring does appear to have a small positive impact on low performing students, when the gains between the first and second academy are examined.

- In 2010-11, the reading proficiency of students was lower among those who received another year of literacy tutoring than students who were tutored one year only, which may have deemed them eligible candidates for participation in the second academy. This group's reading proficiency did double after a second dose of tutoring, which is a statistically significant improvement, although their overall rate was still lower than students who received reading tutoring in the spring 2012 academy only. The reading gains made by the one-year participants are statistically significant as well.
- Almost identical, statistically significant gains in mathematics proficiency were also found for students who participated either one or two years.
- The percentages of students meeting their reading or mathematics growth targets are also similar among students regardless of their years of participation.

Figure 5
Reading Proficiency for Students Tutored in Reading by Years of Participation

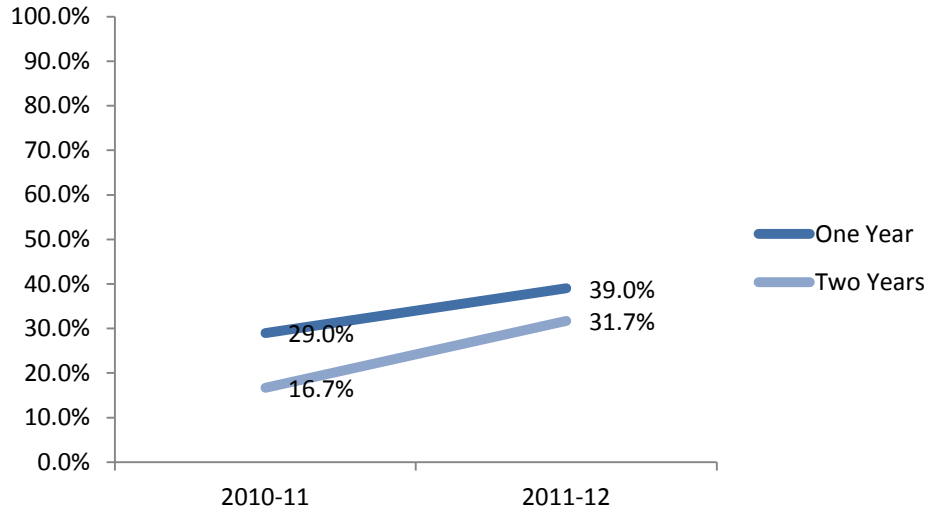


Figure 6
Mathematics Proficiency for Students Tutored in Mathematics by Years of Participation

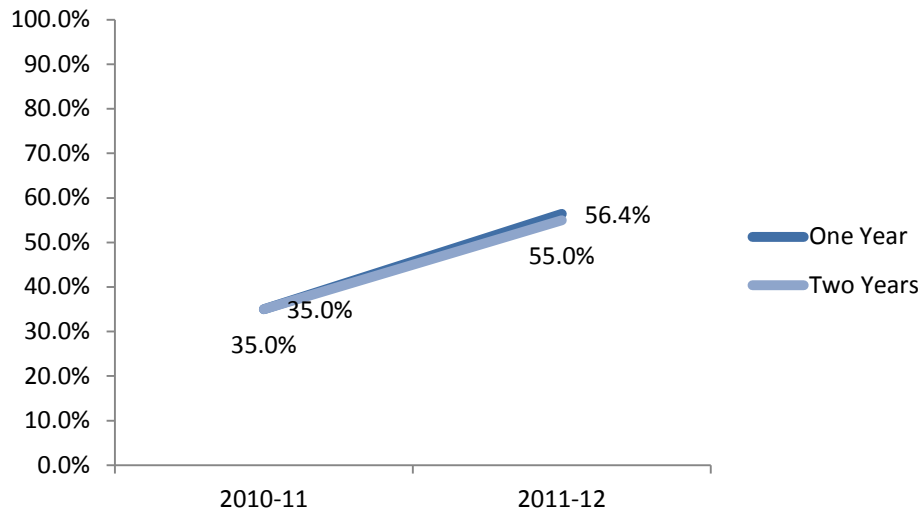
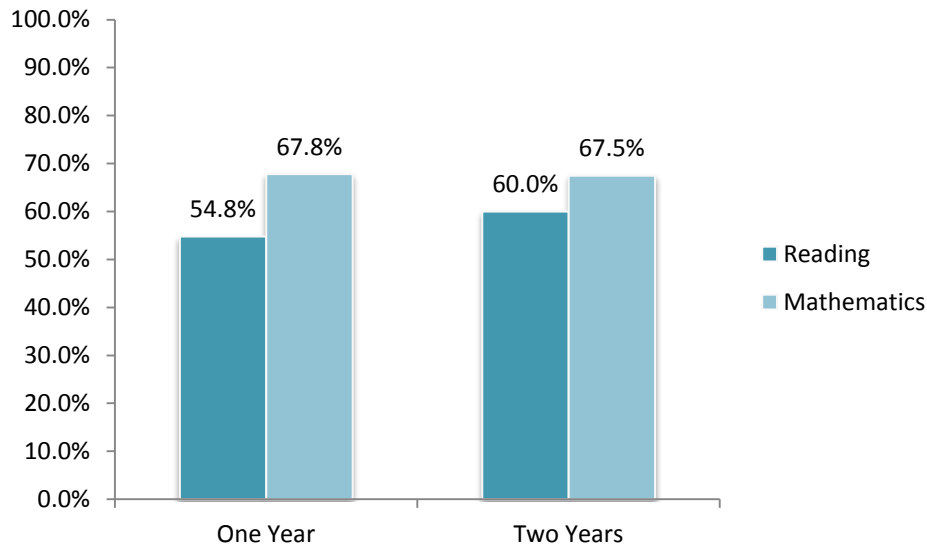


Figure 7
Reading and Mathematics Growth for 2011-12 by Years of Participation



Probability of Meeting Growth Targets

The next analysis investigated the probability of students meeting their reading and mathematics growth targets. Logistic regression models were used to see if student characteristics such as grade level, race/ethnicity, participation in special programs (ED, LEP, SWD), and 2011-12 proficiency levels impacted whether or not students in grades 4-8 would meet their 2011-12 growth targets. One model was applied to students who received AAA reading tutoring and their comparison group and the other model included students who received AAA mathematics tutoring and their comparison group.

- Being proficient on the 2011-12 reading EOG exam significantly increased the odds of meeting growth in reading that same year, regardless of AAA participation.
- AAA reading tutoring did appear to have a small yet statistically significant positive impact on LEP students. For instance, these students were twice as likely to have met their reading growth targets as other students who received reading tutoring and were not identified as LEP.
- The odds of meeting mathematics growth in 2011-12 significantly increased when students were proficient on the mathematics EOG exam in the spring of 2012. This impact occurred for both students who received AAA tutoring and those who did not, yet the extent of the effect was greater for AAA students.

2010-11 AAA Cohort Outcomes

One of the outcomes articulated in the AAA 2010-11 evaluation is that the cohort of students who participated in AAA during the 2010-11 school year would reach proficiency by 2011-12 (Baenen & Lougee, 2011). Analysis was conducted on the students in this cohort who had EOG data for 2009-10 (prior to AAA), 2010-11 (AAA), and 2011-12 (after AAA). The three-year trend data on the reading and mathematics proficiency of this group of students indicates that most were not proficient in 2011-12. These students' proficiency appears to be greatest during AAA implementation and lowest before and after.

- In 2010-11, 42.9% of the students tutored in reading during the spring 2011 academy were proficient. This represents a statistically significant increase of almost 11 percentage points compared to the proportion of students who were proficient prior to AAA in 2009-10 (32.1%). The percentage of students who took the reading EOG exam in 2011-12 and reached proficiency declined to 35.7%.
- The mathematics proficiency rate of the students who received mathematics tutoring during the 2011 spring academy remained relatively stable between 2009-10 (58%) and 2010-11 (59.7%). Among the students who took the mathematics EOG exam in 2011-12, 49.5% were proficient, representing a one-year statistically significant decline of about 10 percentage points.

Table 32
Three-Year Proficiency Trend for
AAA 2010-11 Participants

Subject	2009-10 (Prior to AAA)		2010-11 (AAA) (Grades 3-8)		2011-12 (After AAA)		Difference 2009-10 to 2010-11	Difference 2010-11 to 2011-12
	n	%	n	%	n	%		
Reading	169	32.1%	298	42.9%	222	35.7%	10.8%*	-7.2%
Mathematics	269	58.0%	364	59.7%	263	49.5%	1.7%	-10.2%*

Note: Students in grade 3 in 2010-11 are not included in 2009-10 data; Students in grade 8 in 2010-11 are not included in 2011-12 data.

Cost of AAA

The AAA budget for 2011-12 was allotted based on the expenditures of the spring 2011 academy. Budgeted costs for staff benefits, instructional supplies and materials, and transportation for students increased from amounts expended in 2010-11, whereas reductions were made in salary compensation for tutors and staff development allotments. The overall budget for the spring 2012 academy was over half a million dollars (\$645,619). Nearly all (95.8%) of this budgeted amount was spent (\$618,233). Almost \$20,000 of the anticipated costs for transporting students home after the tutoring sessions was not spent.

Table 33
Academic Achievement Academy Budget, 2011-12

	2010-11 Expenditures	2011-12 Budget	2011-12 Expenditures	Budget Balance
Tutorial Pay	\$335,476.75	\$326,784.56	\$324,807.31	\$1,977.25
Staff Benefits	\$72,672.46	\$78,541.91	\$73,655.22	\$4,886.69
Staff Development	\$35,280.00	\$13,272.00	\$13,272.00	\$0.00
Supplies and Materials	\$103,908.99	\$117,874.04	\$117,332.24	\$541.80
Student Transportation	\$102,241.67	\$109,146.88	\$89,166.15	\$19,980.73
Total	\$649,579.87	\$645,619.39	\$618,232.92	\$27,386.47

Table 34 provides the estimated program cost per student participant. By dividing the total expenditure amount by the total number of student participants, the cost of AAA is estimated to be slightly over \$500 for each participant. This figure is greater than the estimate calculated for 2010-12 by \$43 more per student because fewer students were served in 2011-12 than in 2010-11. One third (414) of the students had 100% attendance in the spring 2012 academy. If all 1,185 students had fully participated in the 30 hours of reading or mathematics offered by AAA, the hourly cost per student would have been \$17.39.

Table 34
Estimated Total Cost per AAA Participant, 2011-12

	2011-12	2010-11	Annual Difference
Total Expenditures	\$618,233	\$649,580	(\$31,347)
# of Student Participants	1,185	1,357	(\$172)
Total Cost Per Participant	\$521.72	\$478.69	\$43

The cost of providing tutoring through AAA during the spring 2012 academy increases considerably if the cost is calculated per proficient student or per student who made academic growth. Proficiency calculations are presented for comparative purposes. Making academic growth was the primary short-term goal of AAA student participants whereas reaching proficiency was more long-term. Based on available achievement data for the participating students in grades 3-8, the cost per student reaching proficiency is over \$1,000 (\$1,152). The cost per student in grades 4-8 who made academic growth is under \$1,000 (\$864). The provision of reading tutoring is considerably more expensive than mathematics tutoring.

Table 35
Estimated Cost per AAA Participant
Meeting Reading or Mathematics Proficiency, 2011-12

Subject	Grade 3-8 Students		EOG Proficiency 2011-12	
	#	Total cost	#/% reaching proficiency	Cost per student reaching proficiency
Reading	707	\$368,856	268 (37.9%)	\$1,376.33
Mathematics	459	\$239,469	260 (56.6%)	\$921.04
Total	1,166	\$608,326	528 (45.3%)	\$1,152.13

Note: The total cost for all students in grades 3-8 with assessment data is calculated by taking the total cost per student (\$521.72) multiplied by the number of students in grades 3-8 (1,166) who have available data. The same logic is applied to the total cost of students receiving reading tutoring and those receiving mathematics tutoring.

Table 36
Estimated Cost per AAA Participant
Meeting Reading or Mathematics Growth Targets, 2011-12

Subject	Grade 4-8 Students		EOG Growth Targets 2011-12	
	#	Total cost	#/% meeting growth targets	Cost per student making growth
Reading	489	\$255,121	271 (55.4%)	\$941.41
Mathematics	329	\$171,646	223 (67.8%)	\$769.71
Total	818	\$426,767	494 (60.4%)	\$863.90

Note: The total cost for all students in grades 4-8 is calculated by taking the total cost per student (\$521.72) multiplied by the number of students in grades 4-8 (818) who have available growth target data. The same logic is applied to the total cost of students receiving reading tutoring and those receiving mathematics tutoring.

References

- Baenen, N., & Lougee, A. (2011). *Academic achievement academy (AAA): Evaluation 2010-11*. WCPSS Data and Accountability Department. Cary, NC: Wake County Public School System.
- Cooper, H., Charlton, K., Valentine, J., Muhlenbruck, L., & Borman, G. (2000) *Making the most of summer school: A meta-analysis and narrative review*. Monographs of the Society for Research in Child Development, 65(1). Malden, Mass: Blackwell Publishers.
- Granger, R., & Kane, T. (2004). Improving the quality of after-school programs. *Education Week*, XXIII (23), February 18. Retrieved from <http://www.pasesetter.org/reframe/documents/improvingprogramsgrangerkane.pdf>
- Lauer, P., Akiba, M., Wilkerson, S., Aphthorp, H., Snow, D., & Martin-Glenn, M. (2004). *The effectiveness of out-of-school time strategies in assisting low-achieving students in reading and mathematics: A research synthesis*. Aurora, CO: Mid-Continent Research for Education and Learning. Retrieved from <http://ssp.wi.gov/files/ssp/pdf/ostfullsum.pdf>
- Lenard, M., Bulgakov-Cooke, D., Jackl, A., Townsend, M., and Baenen, N. (2012). *WCPSS school innovations: 2011-12 year 1 status update*. WCPSS Data and Accountability Department. Cary, NC: Wake County Public School System.
- Hammond, C., & Reimer, M. (2006). *Essential elements of quality after-school programs*. Clemson, SC. National Dropout Prevention Center Network. Retrieved from http://www.portlandchildrenslevy.org/rfi_archives/National%20Drop%20Out%20Prevention%20Study.Best%20Practices%20for%20Quality%20After%20School%20Programs.pdf
- McCombs, J., Augustine, C., Schwartz, H., Bodilly, S., McInnis, B., Lichter, D., & Cross, A. (2011). *Making summer count: How summer programs can boost children's learning*. Santa Monica, CA: RAND Corporation. Retrieved from <http://www.rand.org/pubs/monographs/MG1120>
- Redd, Z., Boccanfuso, C., Walker, K., Princiotta, D., Knewstubb, D., & Moore, K. (2012). *Expanding time for learning both inside and outside the classroom: A review of the evidence base*. Washington DC: Child Trends. Retrieved from <http://www.wallacefoundation.org/knowledge-center/summer-and-extended-learning-time/extended-learning-time/Pages/Expanding-Time-for-Learning-Both-Inside-and-Outside-the-Classroom.aspx>
- Schneider, B., Carnoy, M., Kilpatrick, J., Schmidt, W., & Shavelson, R. (2007). *Estimating causal effects using experimental and observational designs*. Washington DC: American Educational Research Association.

Snow, C.E., Burns, M.S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington: DC. National Academy Press.

Vouk, M. (2012). *Wake County Public School System school statistics and maps, 2011-2012*. WCPSS Office of Student Assignment/Demographics. Cary, NC: Wake County Public School System.