# Examining the Effectiveness of Closing the Achievement Gap Professional Development Demonstration Schools

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# Executive Summary


## Abstract

A study examined the impact of the *Closing the Achievement Gap* (CAG schools) program on the academic achievement of students in 30 schools serving high percentages of African American and economically disadvantaged students in West Virginia, 2004–2008. The program assigned experienced educators, *CAG liaisons*, to the schools to provide school improvement coaching. The study used (a) a quasi-experimental approach to examine the differences between 12 CAG and 12 non-CAG matching schools for fourth-grade reading/language arts and mathematics achievement on the statewide summative assessment; (b) a comparison of gains in the percentage of students who achieved proficiency for the same subject areas, from CAG schools and all other WV schools during those years; (c) focus groups conducted with CAG liaisons to collect data about their work and their perceptions about impacts beyond academic achievement; and (d) CAG school faculty responses to three research-validated survey instruments that measured the schools' capacity for improvement, adherence to continuous school improvement processes, and overall school culture. Analysis of achievement testing showed promise for the program, especially for African American students. Results of the focus groups and surveys provide information about which school improvement efforts received the most attention, and identified areas of strength and needed improvement in CAG schools at the end of the 5-year program.


## Background

This report provides the results of a retrospective multimethod research study to determine the impact of the Closing the Achievement Gap Professional Development Demonstration Schools (CAG schools) on the academic achievement of their students. This 5-year (2004-2008) demonstration project was intended to develop and implement strategies to improve the achievement of all students in 30 schools that served high percentages of underachieving economically disadvantaged and African American students in West Virginia. The program used a school improvement coaching approach, assigning experienced educators, called *CAG liaisons*, who received specialized training to work with the CAG schools. The CAG liaisons worked to a set of standards developed by the West Virginia Department of Education, which included (1) bringing focus, (2) leading change, (3) developing accountability, (4) building capacity, (5) creating community, and (6) growing professionally.

This study was conducted by the West Virginia Department of Education (WVDE) Office of Research[1] to address the following five research questions:

[1] Researchers did not receive funding from the office responsible for the CAG program except for the purchase of research instruments (i.e., surveys).

1. Is there a statistically significant difference between the average reading/language arts and mathematics scale scores for CAG schools when compared with matched comparison schools?
2. To what extent have CAG schools closed the achievement gap for African American students, students with disabilities, and economically disadvantaged students when compared with achievement of all students in the state of West Virginia?
3. What has been the focus of the CAG liaisons over the course of the project, and what do the liaisons perceive the impact of the program to be?
4. How do CAG schools compare with high performing learning communities in terms of continuous school improvement practices?
5. What are the areas of strength and concern in CAG schools in terms of school culture and capacity for improvement?

## Methodology

The study included both quantitative and qualitative components as needed to investigate each of the five research questions:

For Research Question 1 (RQ1) WVDE researchers used a quasi-experimental approach with 12 CAG elementary schools serving as the experimental group and 12 matched comparison schools serving as the control group (non-CAG schools). They examined the differences between the CAG and non-CAG schools for fourth grade reading/language arts and mathematics achievement on the statewide summative assessment, WESTEST, for the years 2004 through 2008. Analyses were conducted to examine the differences in cumulative achievement over all 5 years (i.e., repeated measures ANOVA) and for individual year-to-year pairings (i.e., independent *t* tests). Average scale scores for each school in years 2004 through 2008 were entered as the dependent variables in these analyses. Group membership–as either experimental (i.e., CAG schools) or control (i.e., non-CAG schools)–and time were the independent variables.

For Research Question 2 (RQ2), WVDE researchers examined the extent to which achievement gaps persisted in CAG schools from 2004 to 2008. Achievement gaps were defined as the difference between the percentage of all West Virginia students in non-CAG schools who were at or above Mastery (proficiency) in reading/language arts and mathematics and the corresponding percentage for the following subgroups within CAG schools: 1) all students, 2) African American students, 3) economically disadvantaged students, and 4) students with disabilities. These analyses were conducted for each school and the entire state for all 5 years.

For Research Question 3 (RQ3), focus groups were conducted with CAG liaisons to provide qualitative data about the work they had completed over the course of the project and their perceptions of the impact of the program beyond academic achievement. These semistructured interviews were conducted at the end of the program with all available CAG liaisons. WVDE researchers coded the responses into themes and identified key findings.

For Research Question 4 (RQ4), a research-validated survey instrument developed by Edvantia, Inc., the Continuous School Improvement Questionnaire (CSIQ) was distributed to all faculty and staff in the CAG schools at the end of the school year in 2010 to

measure their perceptions about the extent to which each CAG school possessed features common to high-performing learning communities, that is, schools that have received national recognition as schools of excellence and have demonstrated a commitment to continuous improvement.

For Research Question 5 (RQ5), two other research-validated instruments developed by Edvantia, Inc., the Perceptions of School Culture (POSC) and Measure of School Capacity for Improvement (MSCI) were also distributed to all faculty and staff in the CAG schools during the same time period to measure perceptions about school culture, and the capacity of each of the CAG schools to succeed in school improvement efforts. The results of these two surveys were examined in comparison to a norm-referenced sample of similar schools. CAG schools were provided with a median percentile as a summary statistic. When possible, responses from the 2010 administration of the survey were compared with data collected in the same schools from a 2006 administration.

## Findings

As a result of these investigations, WVDE researchers found the following:

- **RQ1 findings.** Summative WESTEST assessment scores revealed no statistically significant differences between experimental (CAG) and control (non-CAG) elementary schools across the duration of the program. However, all groups examined in CAG schools—that is, African American, economically disadvantaged, and students with disabilities, and all subgroups combined—exhibited higher mean scale scores at the conclusion of the program than at its inception in 2004. This finding held true for both reading/language arts and mathematics. With respect to the Black student subgroup, there was an increase in mean scale scores at CAG schools over time, which ultimately resulted in Black students at the CAG schools exceeding the performance of Black students in non-CAG comparison schools for both reading/language arts and mathematics in 2008. This finding of CAG schools outpacing comparison schools did not hold for the students with disabilities or economically disadvantaged subgroups or for all subgroups combined.
- **RQ2 findings.** WVDE researchers found that as a group, the CAG schools exhibited cumulative proficiency level increases that exceeded statewide increases for the African American, economically disadvantaged, and students with disabilities subgroups, and all subgroups combined. This finding held for both reading/language arts and mathematics. While the CAG schools exhibited more steady improvements in proficiency rates over the period of the program than the state as a whole, achievement gaps for the state were still narrower in 2008 than for CAG schools with respect to mathematics. Findings indicated that CAG schools were slightly more effective than the state in closing achievement gaps in mathematics for students with disabilities, but not for economically disadvantaged or Black students.
- **RQ3 findings.** The liaisons reported that the majority of the technical assistance they provided had focused on addressing Standards 1, 4 and 6. Within these standards, five foci emerged, which included (a) increased student learning and achievement, (b) providing guidance and support to schools as opposed to explicit

direction, (c) increasing open communication with school staff, (d) facilitating and following up with professional development and (e) focusing on using data to drive instruction and assessment.

The information from focus group interviews revealed the challenges and barriers associated with the CAG program including lack of preparation time during the day, requiring them to prepare for their work with teachers, principals, and county administrators in the evenings and on weekends. Other responses to the question about challenges or barriers to their work included the following: (a) getting in the door, (b) money, (c) lack of leadership or resistance to leadership, (d) lack of support, (e) retirements, and (f) maintaining a positive culture.

- **RQ4 findings.** When examining the results of the CSIQ, some notable differences emerged among programmatic levels. CAG elementary and middle schools were generally comparable to or higher performing than the average elementary schools in terms of capacity for improvement. However, CAG high schools performed below the mean for average norm-referenced high schools on all seven subscales. The CSIQ identified at least three areas of strength for CAG schools as a group: (a) the presence of an aligned and balanced curriculum, (b) a positive learning culture, and (c) high quality and purposeful student assessment. The CSIQ identified at least two critical areas of need for CAG schools as a group: (a) building school-family-community connections and (b) increasing school-wide capacity for effective teaching.
- **RQ5 findings.** The POSC identified at least two areas of strength for CAG schools: the presence of a strong student-centered vision, mission, and policies and high levels of teacher responsibility for learning. It also identified at least two potential areas of need for the aggregated group of CAG schools: building a sense of student responsibility for learning and ensuring the presences of an inviting physical environment.

  The MSCI identified at least three areas of strength for CAG schools as a group: the use of differentiated instruction, presence of technical resources, and adoption of a coordinated curriculum. It also identified three critical areas of need for CAG schools as a group: building capacity for peer reviewed practice, increasing expectations for student performance, and fostering equity in practice.

## Recommendations

The WVDE Office of Research makes the following broad recommendations given the findings presented in this report:

WVDE researchers recommend continued monitoring of the achievement gaps in CAG schools and statewide. The Office of Research is poised to accomplish this work via the annual updating of the Closing the Achievement Gap report.

Despite a lack of statistical significance for the fourth-grade assessment data examined, the CAG program was associated with a variety of successful program outcomes including marginally higher post-test perceptions of school culture, capacity for improvement, and continuous school improvement on most item subscales. Additionally, for

the majority of cases, the CAG schools made steady progress in narrowing achievement gaps for all subgroups in both reading/language arts and mathematics. While the research study conducted is not sufficient to determine whether the CAG program caused these changes, it is likely that the support provided by the CAG program was helpful for CAG schools. It is also evident that there is still room for improvement in these schools. The Office of Research recommends continued support in order to capitalize on this success. The CAG liaisons have already built substantial rapport with these schools and would be very valuable in these future efforts.

If the CAG program continues, ongoing evaluation should be conducted from the outset in order to more rigorously determine the program's success in achieving its formative and summative goals. Because the data for this study were compiled retrospectively, it is impossible for WVDE researchers to determine a causal link between the CAG program and the outcomes reported herein. While another evaluation would likely be subject to similar deficiencies due to the lack of a true experiment, it would certainly allow for a more credible study of program impact. Additionally, ongoing evaluation is critical to guiding programmatic adjustments to the services delivered via the program.

The current study revealed a great deal of valuable information about the areas of strength and areas of concern in individual CAG schools. This information could be potentially useful in guiding future intervention efforts in the CAG schools. The Office of Research has provided these results to the program director and recommends that they be shared with the individual schools involved in the CAG program and perhaps with other offices within the WVDE that are working with these schools to impact school improvement. Specifically, the areas of strength identified by this study could be used as leverage points within these schools and areas of concern could be used to provide a focus for additional support services.

The information from focus group interviews revealed the challenges and barriers associated with the CAG program. WVDE should learn from these challenges and design intervention programs that are better suited to avoid these potential pitfalls.

## Limitations

This study was retrospective in nature. The limited availability of some data imposed constraints on the analyses WVDE researchers were able to conduct. Staff did not employ a methodology adequate to make causal inferences about the impact of the CAG program. This report is intended to stand among other evidence collected by the WVDE Office of Title II, III, and System Support during the course of the CAG program, and should be viewed as a single component rather than as the entire portfolio of evidence.

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# Introduction

The achievement gap in education is usually described as a gap in academic performance, between racial/ethnic minority and disadvantaged students and their White peers (National Governors Association, 2003). According to Olson (2004), the achievement gap can be seen in students' grades, standardized test scores, course selection, high school dropout rates, college completion rates, other academic areas, and in diminished job opportunities and lifetime earnings potential. The median lifetime income for someone between the ages of 24 and 64 who does not earn a high school diploma is about $1 million. If that same person obtains his or her high school diploma, the median income rises to $1.2 million, and if that person completes some junior college or college education and/or training after high school, then the median income rises to approximately $1.5 million (Olson, 2004). Achieving these education milestones depends in large measure on the success of students in mastering the skills and gaining the knowledge required to advance through their school years.

The Center on Education Policy (CEP, 2009) recently released the third annual report in a multiyear study of student achievement. The report provides a thorough analysis of student statewide accountability assessment data disaggregated by subgroup (whenever possible) from all 50 states. CEP examined grades 4, 8, and 10 state test results at three achievement/ performance levels: (a) *basic-and-above*, (b) *proficient-and-above*, and (c) *advanced*. For their analyses, CEP treated West Virginia's WESTEST performance level *partial mastery* as *basic*; WESTEST *mastery* as *proficient*; and WESTEST *above mastery + distinguished* as *advanced*. The researchers then determined the extent to which students from different racial/ethnic and socioeconomic backgrounds had made gains within all three performance levels and/or whether progress was lagging at any performance level for specific subgroups.

Overall, CEP found that West Virginia, like most of the country, had made progress in closing achievement gaps for the various subgroups identified in the No Child Left Behind Act (NCLB). In West Virginia during the 2004 to 2008 period the achievement gap narrowed for African American (compared with White) children and economically disadvantaged children (compared with their more advantaged peers) at grades 4 and 8 in mathematics. At grade 10, gains in mathematics achievement for African Americans were similar to Whites (meaning there was no progress in closing the gap), while the achievement gap continued to narrow for economically disadvantaged students. There were similar results for reading, with African American and economically disadvantaged students narrowing the achievement gap in all three grades, except for African American eighth graders, who lost a little ground (-0.3%) compared with their White peers' gains. Although these are generally encouraging results, the achievement gaps remain large, ranging from a 7- to 20-point difference in the percentage of students scoring at proficient or above, as shown in Table 1.

**Table 1. West Virginia Subgroup Achievement Trends in Reading and Mathematics by Percentages Proficient or Above**

| | Grade 4 | | | Grade 8 | | | Grade 10 | | |
|---|---|---|---|---|---|---|---|---|---|
| Subgroup | Proficient or Above 2004 | Proficient or Above 2008 | Average Annual Gain | Proficient or Above 2004 | Proficient or Above 2008 | Average Annual Gain | Proficient or Above 2004 | Proficient or Above 2008 | Average Annual Gain |
| Reading Achievement | | | | | | | | | |
| White | 74% | 83% | 2.3 | 81% | 81% | 0.0 | 77% | 74% | -0.8 |
| African American | 58% | 76% | 4.5 | 73% | 72% | -0.3 | 61% | 63% | 0.5 |
| Not low-income | 90% | 90% | -0.1 | 89% | 88% | -0.3 | 85% | 81% | -0.9 |
| Low income | 65% | 76% | 2.8 | 72% | 73% | 0.3 | 65% | 63% | -0.5 |
| Mathematics Achievement | | | | | | | | | |
| White | 70% | 77% | 1.8 | 70% | 73% | 0.8 | 64% | 69% | 1.3 |
| African American | 54% | 67% | 3.3 | 50% | 59% | 2.3 | 44% | 49% | 1.3 |
| Not low-income | 81% | 86% | 1.3 | 80% | 82% | 0.4 | 73% | 76% | 0.7 |
| Low income | 61% | 68% | 1.8 | 58% | 63% | 1.3 | 49% | 57% | 2.0 |

SOURCE: Table WV-12 and Table WV-13 in *State Profiles and Worksheets for State Test Score Trends Through 2007–08,* Subgroup Achievement and Gap Trends—West Virginia, published by Center on Education Policy. Retrieved from http://www.cep-dc.org/index.cfm?fuseaction=Page.viewPage&pageId=572.

## The Closing the Achievement Gap (CAG) Program

In 2003 , West Virginia Governor Bob Wise created the Governor's Minority Students Strategy Council to investigate achievement gap issues in the state and make recommendations. The council completed its investigation, identifying achievement gaps in counties with high percentages of low income and minority students, and proposed legislation to create professional development (PD) schools as a demonstration project that could provide a model for other schools and districts in the state facing achievement gap issues (Kusimo, Petty-Wilson, & Body, 2004).

The West Virginia Legislature passed legislation, which was signed into law in 2004 (School Law Article 2E. High Quality Education Programs. §18-2E-3g. Special demonstration professional development school project for improving academic achievement). In the bill language, the Legislature made the following statements:

(1) Well-educated children and families are essential for maintaining safe and economically sound communities;

(2) Low student achievement is associated with increased delinquent behavior, higher drug use and pregnancy rates, and higher unemployment and adult incarceration rates;

(3) Each year, more students enter school with circumstances in their lives that schools are ill-prepared to accommodate;

(4) Ensuring access for all students to the rigorous curriculum they deserve requires effective teaching strategies that include, but are not limited to, using a variety of instructional approaches, using varied curriculum materials, engaging parent and community involvement and support in the educational process, and providing the professional development, support and leadership necessary for an effective school; and

(5) The achievement of all students can be dramatically improved when schools focus on factors within their control, such as the instructional day, curriculum and teaching practices.

## The Population to Be Served and Schools Selected

Among the provisions in the law was the establishment of a special 5-year demonstration project targeting elementary and middle schools located in 10 counties where the enrollment of African American and/or economically disadvantaged students was at least 5% (Table 2).

**Table 2. County Ranking by Percentage of Black Subgroup (Highest Percentage to Lowest) and Percentage of Economically Disadvantaged Subgroup, 2008-2009**

| County | Total enrollment count* | Black enrollment* | Low SES enrollment* | % Black | % Low SES | Median household income, 2008** |
|---|---|---|---|---|---|---|
| West Virginia | 281,894 | 15,200 | 140,748 | 5.4 | 49.9 | $37,528 |
| Kanawha | 28,465 | 3,718 | 14,671 | 13.1 | 51.5 | $41,488 |
| Berkeley | 17,214 | 2,091 | 7,261 | 12.1 | 42.2 | $52,472 |
| McDowell | 3,675 | 419 | 2,903 | 11.4 | 79.0 | $20,486 |
| Raleigh | 12,316 | 1,281 | 6,325 | 10.4 | 51.4 | $34,589 |
| Jefferson | 8,398 | 827 | 2,579 | 9.8 | 30.7 | $62,802 |
| Mercer | 9,538 | 924 | 5,487 | 9.7 | 57.5 | $31,283 |
| Ohio | 5,279 | 494 | 2,421 | 9.4 | 45.9 | $38,344 |
| Cabell | 12,522 | 1,116 | 6,344 | 8.9 | 50.7 | $33,360 |
| Fayette | 6,810 | 439 | 3,806 | 6.4 | 55.9 | $32,934 |
| Marion | 8,122 | 505 | 3,917 | 6.2 | 48.2 | $35,630 |

*West Virginia Department of Education (2008). Counties by Composition, All Grades, All Subgroup - Sorted by County, School Year: 2008-2009. Retrieved from http://wveis.k12.wv.us/nclb/pub/enroll/e06Makeup_county.cfm?so CNSN&grade=99&size0&updown=1&sop=0&spcd=T&sy=09

**U.S. Census Bureau (n.d.) State & County Quickfacts. Washington , DC: Author Retrieved from http://quickfacts.census. gov/qfd/states/54000.html

The law required that at least three public schools from each of the 10 counties become demonstration schools, for a total of 30 schools (Gilchrist, Trevisan, Salgado, and Holloway, 2006). The selected schools would operate using an approach to professional development meant to address the particular needs of underachieving African American, economically disadvantaged, and disabled students, enabling them to catch up with their White, economically better-off, and nondisabled peers. Passage of this legislation resulted in the development of the Closing the Achievement Gap Professional Development Demonstration Schools (CAG schools).

Within the counties selected for the CAG schools project, the percentage of needy students ranged from a relative low of about 31% to a high of 79%, with the median at 50% (Table 2). And while West Virginia statewide has a relatively small percentage of Black students (approximately 5.4% of the total student population or 15,200 students in 2008-2009), the 10 counties represented in this study have the highest percentages of Black public school students (Table 2).

Not all of the original 30 schools participated for the full 5 years of the project due to various factors, including school consolidations, school splitting (in an area of the state experiencing rapid growth), and the decision of one district (Ohio County) to discontinue participation after the first 2 years. By the end of the project, there were 26 participating schools.

## Program Funding

The program was funded through a special appropriation from the West Virginia Legislature, which paid for school improvement specialists, called *CAG liaisons*, and provided grants to counties that participated in the project. The grants to counties were for $20,000 a year, which was split among the three schools to be served, and was used to pay for additional professional development and other specialized support needed in the schools. The CAG liaisons, who worked halftime, were paid by the state separately. After the first year or two, some counties opted to provide additional funding sufficient to support their CAG liaison fulltime.

## Program Design

Beginning in the mid 1990s, various states have experimented with an approach to providing professional development and other assistance to struggling schools by hiring and training experienced, highly successful educators to serve as *school improvement specialists* (or *school improvement coaches*). This intervention usually begins with the school improvement specialist helping the principal(s) and teachers in a low-performing school study data related to their own school (e.g., graduation rates of various subgroups, attendance rates, achievement tests scores, and the like) and identifying areas of needed improvement. With help from the school improvement specialist, the teachers and administrators then bring focus to their efforts by putting together an improvement plan that identifies a manageable number of issues to address in the coming year. Activities then focus on gaining the knowledge, skills, and resources most needed to address the identified needs. Key to the success of these efforts is reserving time in the schedule for school faculties to meet and collaborate on a regular and ongoing basis, and establishing a professional learning community, which will be involved in continuous

improvement by using data to drive their planning, teaching, and improvement initiatives going forward.

Kentucky and Tennessee have supported two of the most influential school improvement coaching programs. The earliest one is the Kentucky Distinguished Educator program (now known as the Highly Skilled Educator program), which began in the 1994-1995 school year. According to a report produced by the Southern Regional Education Board, schools were identified for this intervention because they had experienced serious declines in their performance. Their success after working with a distinguished educator was notable; of "the 53 schools initially selected, 100% reversed their downward trend after two years of participation in [the program] and 63% exhibited student growth in excess of the expected rate of growth established for their school" (Mandel, 2000, p 3). Subsequent years also showed impressive success in turning around troubled schools, allowing schools to meet their NCLB adequate yearly progress goals. According to a 2006 report, "schools that received assistance through a combination of [highly skilled educator, Commonwealth School Improvement Fund] grant, and a scholastic audit or review showed statistically significant improvements in their accountability index scores" (Program Review and Investigations Committee, 2006, p. ix). The Commonwealth of Kentucky continues to support the program.

Tennessee's Exemplary Educators program, established in 2000, draws upon the experience of retired teachers and administrators, hired through a rigorous selection process. On average, exemplary educators have 34 years of experience and most have at least a master's degree. The skills and expertise of the exemplary educators are then further augmented through ongoing and intensive professional development (Edvantia, 2005). According to a recent report, 42 schools served by exemplary educators were rolled off the state's high priority schools list in 2008-2009, with 38 of them classified as being in good standing; and since 2001, 176 schools served by exemplary educators have achieved adequate yearly progress. The program, operated by a nonprofit research and development organization, Edvantia, was honored by Harvard University with a Top 50 Innovations in American Government award in 2007 (Bumgardner, 2009). The Tennessee Exemplary Educator program, like the Kentucky Highly Skilled Educator program, continues to be supported by its sponsoring state education agency.

Brief reports of similar programs have appeared in the literature, including programs in Alabama, Georgia, Louisiana, North Carolina, and South Carolina (Program Review and Investigations Committee, 2006) and in Maine (Kostin & Haeger, 2006). There is very little rigorous research in the literature, however, about the efficacy of any of these programs, although a series of descriptive and quasi-experimental evaluation studies of the Tennessee program has been conducted by Edvantia (see Craig, Butler, & Moats, 2005; Craig, J., et al., 2004a; 2004b; 2005a; & 2005b).

The school improvement coaching program in West Virginia, known as the Closing the Achievement Gap Professional Development Schools program, was initially developed by the

WVDE Office of Title II, III and System Support in collaboration with Edvantia. A description of how the program worked in West Virginia follows.[2]

*Professional development for teachers and administrators at CAG schools*

Professional development for teachers and administrators from the 30 CAG schools took place primarily in two settings: (a) statewide Leadership Team Conferences held twice a year, and (b) onsite in their own schools and districts. Principals (or their designees), teacher leaders, and CAG liaisons attended the Leadership Team Conferences, where they learned about such topics as the continuous improvement process, leading change, processes for teams to use to reach consensus when making decisions, data analysis, agenda building, keeping minutes, monitoring implementation of improvement plans, and so forth. Principals arrived a half day before the teacher leaders for these 3-day meetings, so they could be introduced to the purposes of the training and their roles in conducting it. The WVDE planned and conducted the conferences, which featured training by staff from the department and by nationally known providers from such organizations as ASCD, Mid-Continent Research for Education and Learning (McREL), Solution Tree, and others.

While the Leadership Team Conferences provided information about high priority topics, helping teachers and administrators transfer that knowledge to school practice was a large part of the professional development facilitated by CAG liaisons in the CAG schools. CAG liaisons observed classrooms, demonstrated teaching techniques in classrooms, participated in leadership team meetings and helped teacher leaders and principals identify and prioritize other specialized technical assistance and professional development needed to address the needs of the individual schools they worked in. Additionally, they helped facilitate the development of collaborative teams (also known as professional learning communities), organized by grade level or content area, and helped schools find ways to allocate time in the school schedule for these teams to do their work.

*Selection and training of CAG liaisons*

The WVDE held an open recruitment for CAG liaisons in 2004. Selection was based on rigorous criteria, including demonstrated understanding and success in improving curriculum and instruction, increasing student learning, and leading change. WVDE selected people who had been successful in improving their own schools, either as principals or district central office staff. Some were retired; others were hired from their administrative positions.

The CAG liaisons were initially trained by Edvantia; trainers included staff who had been instrumental in developing the Exemplary Educator program in Tennessee, including one individual who had worked for several years as an Exemplary Educator. CAG liaisons received at least 10 days of training a year conducted by Edvantia or the WVDE. In later years of the program, CAG liaisons individually received specialized training based on the needs of the schools they served, which developed considerable expertise among the CAG liaison cadre.

[2] Except where noted, the description of the CAG program is based on an interview with Richard Lawrence, executive director of the WVDE Office of Title II, III, and System Support, on December 13, 2010.

All training for CAGS was grounded in the principles of the WVDE's Framework for High Performing 21st Century School Systems, which includes three components: (a) a cohesive and shared set of core beliefs that enhance staff performance on behalf of students; (b) the use of high-yield practices related to curriculum, instruction, school culture and organizational practices, and student and parent support; and (c) a continuous improvement process that utilizes data on an ongoing basis for setting priorities and strategic planning (WVDE, 2006).

CAG liaisons were provided with a set of six standards under which they operated as they served their respective schools. The standards were largely based on the successful Tennessee Exemplary Educator program with adaptations made in collaboration with the WVDE staff to bring them into alignment with the Framework for High Performing 21st Century School Systems. Edvantia and WVDE staff developed a professional development curriculum to support the operationalization of the six standards, which served as the guiding framework for the project. Each standard had under it broad areas of assistance that the CAGs could provide to the schools they served, as follows:

Standard 1: Bringing Focus

- Professional development and assistance in writing and reviewing Strategic 5-Year Plans
- Development of leadership teams in schools
- Assistance with using data as the basis for school and classroom decision making

Standard 2: Leading Change

- Creation of professional learning communities
- Collaboration with instructional coaches/demonstration teachers to model and teach 21st century learning and instructional strategies
- Creation of cooperative planning protocols to maintain focus on student learning

Standard 3: Developing Accountability

- Assistance with the use of formative and benchmarking assessments for student learning
- Facilitating cooperative planning as a vehicle for improving instruction
- Working with administrators and teachers on using data for program and instruct-tional evaluation

Standard 4: Building Capacity

- Work with staff to understand and implement standards-based curriculum and in-structtion that is driven by data
- Professional development for principals and staff on 21st century teaching and learning
- Facilitating the habit of reflective practice by school staff
- Supporting conditions in which schools can close the achievement gap

Standard 5: Creating Community

- Facilitating cooperative planning

- Book studies on culture and community
- Working cooperatively with local colleges/universities and the West Virginia Achievement Project

Standard 6: Growing Professionally

- Participation in year-long professional development as a foundation for school improvement
- Engaging in on-going reading and research on topics appropriate to our schools
- Professional development on 21st century learning (West Virginia Department of Education, n.d., p. 3)

*Level of involvement of CAG liaisons*

The WVDE did not prescribe a sequence or priority to the standards, instead allowing CAG liaisons to decide what approach to take in focusing their efforts based on the needs of the individual schools they served. In most cases, CAG liaisons worked with three schools located within each participating county. They generally worked one full day in each of their assigned schools, each week. Their travel was paid for, and they worked out of their homes when they were not in schools.

## Purpose of the Study

This report provides the results of a retrospective multimethod research study to determine the impact of the CAG schools program on the academic achievement of students and to describe implementation issues encountered by the CAG liaisons. The study, which included both quantitative and qualitative components, was conducted by the West Virginia Department of Education (WVDE) Office of Research.[3] Five broad research questions guided the study:

1. Is there a statistically significant difference between the average reading/language arts and mathematics scale scores for CAG schools when compared with matched comparison schools?
2. To what extent have CAG schools closed the achievement gap for Black, special education and economically disadvantaged students when compared with achievement of all students in the state of West Virginia?
3. What has been the focus of the CAG liaisons over the course of the project and what do the liaisons perceive the impact of the program to be?
4. How do CAG schools compare with high performing learning communities in terms of continuous school improvement practices?
5. What are the areas of strength and concern in CAG schools in terms of school culture and capacity for improvement?

[3] Researchers did not receive funding from the office responsible for the CAG program except for the purchase of research instruments (i.e., surveys).

# Research Methodology

The five questions guiding this study required differing research methods and focused on various participants in the Closing the Achievement Gap (CAG) schools, including students, teachers, administrative staff, and CAG liaisons. For this reason, the methodological approach taken for each question is described in turn.

## Research Question 1

*Is there a statistically significant difference between the average reading/ language arts and mathematics scale scores for CAG schools when compared with matched comparison schools*?

To address Research Question 1 (RQ1) the WVDE researchers employed a quasi-experimental design with experimental and control groups.

*Participant characteristics*

The 12 schools in this part of the study had high percentages of economically disadvantaged students—in all but one case exceeding the state average of 50%—and relatively high percentages of African American students. All schools were at the elementary level. Subgroups of interest were economically disadvantaged and African American students, and students with disabilities.

*Sampling procedures*

Selection of experimental school sample began with the full pool of 26 CAG schools. The research team then eliminated schools lacking a full record of longitudinal student data for all relevant subgroups to be examined, reducing the pool of eligible schools to 20: 12 elementary schools, 7 middle schools, and 1 high school. Further considerations in selecting the sample included the fact that analyses of scale score data must be conducted *within* grade levels due to the presence of unique scales within each grade level, and the need for a minimum sample size of 10 schools that had enrollments of all study subgroups, in order for analyses to yield valid results. The research team selected the only programmatic level—elementary school—for which there were enough schools for analysis. As a result the final experimental sample consisted of 12 CAG elementary schools.

The 12 schools in the control group were selected based on the following stratified criteria to ensure that the control group closely matched the experimental group on these key variables: 1) percentage of students at poverty level, 2) location of schools, 3) grade span represented within the schools; 4) enrollment within each school; 5) percentage of students identified as having disabilities, and 6) percentage of students identified as African American.

*Measures and covariates*

Once all schools ($N$ =24) had been identified, fourth-grade data from the WESTEST reading/language arts and mathematics assessments were collected and analyzed for 12 CAG

schools (experimental) and 12 matched (control group) schools. The fourth grade was selected to ensure consistent interpretation of scores across schools. WESTEST data for school years 2003-2004, 2004-2005, 2005-2006, 2006-2007, and 2007-2008 were analyzed with scale scores used as the unit of measure for analyses in all schools. Mathematics and reading/ language arts scale scores served as dependent variables; independent variables included condition (experimental or control), race/ethnicity (African American), socioeconomic status (economically disadvantaged), and identification for special education services.

*Research design*

RQ1 sought to determine whether having CAG liaisons assigned to work with specific schools resulted in increased student performance on the statewide summative assessment over a 5-year period (2004-2008). Two different statistical tests were administered: (a) repeated measures analyses of variance (ANOVAs), and (b) *t* tests. Repeated measures ANOVAs were used to test the statistical significance of net changes in student achievement between the experimental and control groups over all 5 years of the project. In a sense, this test addresses the cumulative impact of the program on student achievement, both between and within groups. However, this test does not address the statistical significance of any changes that occurred between specific pairs of academic years (e.g., 2004 to 2005, 2005 to 2006, or 2005 to 2008). Additionally, the ANOVAs do not test for the significance of individual year-to-year changes. To satisfy these demands, a series of independent *t* tests were completed.

## Research Question 2

*To what extent have CAG schools closed the achievement gap for Black, special education and economically disadvantaged students when compared with achievement of all students in the state of West Virginia?*

Due to the limitations described above, which resulted in a sample consisting of elementary schools only, WVDE researchers chose to conduct a series of descriptive *post hoc* analyses that were inclusive of summative assessment data from all grade levels when addressing Research Question 2 (RQ2).

*Participant characteristics*

Students at all grade levels who attended CAG schools were the participants in this study.

*Sampling procedures*

The entire population of CAG schools is included in these analyses, with the comparison group being the entire population of West Virginia public school students.

*Measures and covariates*

WVDE researchers decided to use proficiency rates as a way to gain a valid school-wide statistic because, unlike scale scores, which are scaled independently within each grade level and cannot be aggregated across grade levels, the percentage of students attaining proficiency can be reasonably aggregated across grade levels for purely descriptive purposes. Dependent variables

were proficiency rates in reading/languages arts and mathematics testing; independent variables included condition (CAG schools cf. all non-CAG schools in West Virginia), race/ethnicity (African American cf. all students), socioeconomic status (economically disadvantaged cf. nondisadvantaged), and identification for special education services compared to nonidentified students.

*Research design*

As a first step, the research team calculated the total number of students in each subgroup and grade level at each of the CAG schools. WVDE researchers next determined the number of students in each subgroup and grade level who had met or exceeded mastery on the reading/language arts and mathematics subtests of the WESTEST. These students were then aggregated across grade levels to yield a school-wide number of students in each subgroup that met or exceeded proficiency. This number was divided by the total number of students in each subgroup for whom assessment data were available. This yielded a school-wide percentage of students who either met or exceeded proficiency in reading/language arts and mathematics in 2004, 2005, 2006, 2007, and 2008. This process was replicated for the entire state as a point of comparison. Proficiency rates for CAG schools were then plotted against proficiency rates for the entire state to determine the extent to which CAG schools were able to close the achievement gap between key subgroups of students and the overall population of WV students.

## Research Question 3

*What has been the focus of the CAG liaisons over the course of the project and what do the liaisons perceive the impact of the program to be?*

Focus groups were conducted to address Research Question 3 (RQ3).

*Participant characteristics*

CAG liaisons, who were selected, trained, and worked in the CAG schools during the 5-year program, participated in this part of the study. CAG liaisons representing experiences at the elementary, middle, and high school levels participated in focus groups.

*Sampling procedures*

All CAG liaisons were requested to participate.

*Measures and covariate*

The WVDE researchers used a semistructured focus group interview protocol consisting of eight open-ended questions (Appendix B) to guide the conversations.

*Research design*

On November 3, 2009, six WVDE researchers met at the West Virginia Cultural Center in Charleston, West Virginia, to lead focus group sessions with CAG liaisons during one of their regular meetings. Interviews occurred over the course of 2 hours. The WVDE researchers attended the meeting and interviewed small groups of 3 to 4 CAG liaisons. The purpose of this data collection session was to allow the WVDE researchers to learn more about what the CAG

liaisons believed was the primary focus of their jobs, their roles and duties, what they felt were the greatest accomplishments at the school(s) and districts they served, what they saw as barriers to their work, and so forth.

The data collection process began with a brief overview of the CAG Schools program by the program director and a self-introduction by each CAG liaison. Following the opening introductions, the CAGs were divided into groups of three to four liaisons and paired with two staff in each focus group. Two WVDE researchers were placed with each group of CAG liaisons so that one researcher could facilitate the conversation using the protocol questions, and one researcher could type notes from the discussions. Focus group sessions were then transcribed for analysis. In the analysis stage, WVDE researchers focused on identifying themes prevalent across all focus group sessions. A WVDE researcher read and reread the transcripts noting the repetition of specific words, phrases or ideas. These repeated words or phrases were coded, collected, and collapsed into relevant themes. Selected participant quotations supporting specific themes were preserved to provide an authentic voice.

## Research Question 4

*How do CAG schools compare with high performing learning communities in terms of continuous school improvement practices?*

Research Question 4 (RQ4) was addressed by conducting a survey using a validated, norm-referenced instrument, and interpreting the resulting descriptive statistics.

*Participant characteristics and sampling procedures*

All faculty and staff at all 26 CAG schools were asked to participate in the survey.

*Measures and covariates*

The Continuous School Improvement Questionnaire ([CSIQ] Meehan, Salgado, Cowley, Finch, Craig & Butler, 2006) was used to address RQ4. The CSIQ is a measure of schools' performance on seven dimensions critical to school improvement. The tool has demonstrated excellent reliability and validity through previous research (Meehan et al., 2006). The CSIQ contains 70 Likert-type response items which comprise seven distinct subscales, described below:

1. *Learning Culture* "...reflects how well the culture of the school encourages learning by all—students, staff, and administrators."
2. *School-Family-Community Connections* "...reflects the degree to which a staff perceives that parents and community members are involved in and feel part of the school."
3. *Shared Leadership* "...reflects the extent to which staff view leadership as being shared—whether school administrators dominate decision making or there are mechanisms for involving teachers, students, and parents."
4. *Shared Goals for Learning* "...assesses the extent to which the school has clear, focused goals that are understood by all members of the school community."

5. *Purposeful Student Assessment* "...reflects the extent to which respondents view student assessment data as meaningful; use data to guide instructional decisions; and believe data are communicated to the greater school community, including teachers, parents, students, and the general community."
6. *Effective Teaching* "...measures the extent to which teacher practice aligns with research on effective teaching."
7. *Aligned and Balanced Curriculum* "...reflects the extent to which professional staff members perceive the school's curriculum to be aligned and balanced." (Meehan et al., 2006, pp. 3–4).

*Research design*

The survey was mailed to schools at the end of the 2009–2010 school year, and the forms were mailed back to WVDE. Data were compiled, analyzed, and then compared with normative data contained within the *CSIQ User Manual and Technical Report* (Meehan et al., 2006). Specifically, for each of the seven subscales of the CSIQ, comparisons were made between the 26 CAG schools and data from a large normative sample of schools previously identified by Edvantia researchers as *high performing learning communities* (HPLCs) and *all additional schools*. HPLCs are defined as schools that "possess positive characteristics relative to both student performance and commitment to continuous learning and improvement on the part of professional staff of the school" (Meehan, et al., 2002, p. 26). The comparison of data from CAG schools with HPLCs was intended to illustrate where the CAG schools stand when compared to a very rigorous benchmark. Additionally, CAG schools were compared to all additional schools identified in the *CSIQ User Manual and Technical Report* as a point of comparison between CAG schools and the average or typical school. It was expected that CAG schools would have mean scores that were generally comparable to or greater than at least average or typical schools, given the fact that the CAG schools have received considerable WVDE resources over the course of the program.

## Research Question 5

*What are the areas of strength and concern in CAG schools in terms of school culture and capacity for improvement?*

Two surveys were conducted to investigate Research Question 5 (RQ5), both surveys were conducted using validated and norm-referenced instruments.

*Participant characteristics and sampling procedure*

Faculty and staff at all 26 CAG schools were requested to participate in both surveys.

### School culture measures

*Measures and covariates*

To collect data related to school culture, the Perceptions of School Culture questionnaire ([POSC] Cowley, Voelkel, Finch, & Meehan, 2006) was administered. The POSC is a tool to measure perceptions of six key components of school culture. The tool has demonstrated

reliability and validity through previous research (Cowley, Voelkel, Finch, & Meehan, 2006). The POSC contains 62 Likert-type response items which comprise six distinct subscales as described below:

1. *Collaborative Working Relationships* "...reflects the extent to which faculty work together, trust and respect each other, have open channels of communication, and share leadership and responsibility for problem solving and decision making."
2. *Student-Centered Vision, Mission, and Policies* "...indicates the degree to which the school vision, mission, goals, and policies are clear and consistent with each other; incorporate high expectations for all students; and are communicated to staff students and parents."
3. *Student Responsibility for Learning* "...measures faculty perceptions of their students' intrinsic motivation, persistence, awareness of their own learning strengths, and control over their own learning."
4. *Teacher Responsibility for Learning* "...reflects the degree to which faculty strive to improve teaching and learning, at both the individual and collective levels, and share responsibility for high levels of student learning."
5. *Inviting Physical Environment* "...indicates the extent to which the school's physical environment is perceived as clean, safe, and attractive."
6. *Students and Parents as Decision Makers* "...assesses the degree to which students and parents participate in planning and decision making that impact the school program." (Cowley, et al., pp. 2–3).

*Research design*

The survey was mailed to schools at the end of the 2009–2010 school year, and the forms were mailed back to WVDE. Data from the CAG schools were compiled, analyzed, and then compared with normative data included in the *POSC User Manual and Technical Report* (Cowley, et al., 2006). Specifically, for each of the six subscales of the POSC, comparisons were made between the 26 CAG schools and data from a large normative sample of schools previously compiled by Edvantia researchers. The comparison is intended to illustrate where the CAG schools stand when compared to other schools from the same programmatic level. A percentile rank ranging from 1 to 99 was determined for each CAG school for each subscale of the POSC.

WVDE researchers also compared the average POSC subscale scores for the 26 CAG schools to the mean subscale scores for all CAG schools as reported in the 2006 Edvantia research report, *Baseline Study of Selected Professional Development Schools in West Virginia* (Gilchrist, Trevisan, Salgado, & Holloway, 2006), which was based on an administration of the instrument at the beginning of the program. It should be noted that these comparisons were made solely for descriptive purposes. No conclusion can be made as to whether the results are statistically significant or directly attributable to the presence of the CAG program.

## Capacity for school improvement measures

*Measures and covariates*

The Measure of School Capacity for Improvement ([MSCI] Hughes, Copley, Howley, & Meehan, 2006) is a measure of how a school's faculty perceives their school relative to seven areas that relate to continuous school improvement. The tool has demonstrated reliability and validity through previous research (Hughes, et al., 2006). The MSCI contains 58 Likert-type response items, which comprise seven distinct subscales as described below:

1. *Equity in Practice* "...assesses equitable practices in the school—specifically, responsive pedagogy and anti-discriminatory practices."
2. *Expectations for Student Performance* "...items assess staff members' expectations of the students and their beliefs that all students can perform well academically."
3. *Differentiated Instruction* "...addresses instructional practices and strategies for reaching students of diverse learning needs."
4. *Improvement Program Coherence* pertains to the "extent to which improvement initiatives and efforts at a school are coordinated."
5. *Peer Reviewed Practice* "...explore[s] the observation and review by staff of their peers' work."
6. *Coordinated Curriculum* "...addresses the coordination of curriculum within and across grade levels at the school."
7. *Technical Resources* concerns "instructional resources and materials, including whether staff possess or have immediate access to adequate materials and resources to achieve instructional objectives." (Hughes, et al., 2006, pp. 2–3).

*Research design*

The survey was mailed to schools at the end of the 2009–2010 school year, and the forms were mailed back to WVDE. Data from CAG schools were compiled, analyzed, and then compared with normative data included in the *MSCI User Manual and Technical Report* (Hughes, et al., 2006). Specifically, for each of the seven subscales of the MSCI, comparisons were made between the 26 CAG schools and data from a large normative sample of schools previously identified by Edvantia researchers as average or typical schools. It was expected that CAG schools would have mean scores that were generally comparable to or greater than average or typical norm-referenced schools, given the fact that the CAG schools have received considerable WVDE resources over the course of the program. Furthermore, the mean scores for each of the seven subscales were compared to the mean scores obtained at the beginning of the CAG program in 2005.

# Results

## Section I. Summative Assessment Results

### Research Question 1

*Is there a statistically significant difference between the average reading/ language arts and mathematics scale scores for CAG schools when compared with matched comparison schools?*

Two different statistical tests were administered: (a) repeated measures two-way analyses of variance (ANOVAs) to test the statistical significance of net changes in fourth-grade student achievement between the experimental and control groups, and (b) *t* tests to determine the statistical significance of any changes that occurred between specific pairs of academic years and to test for the significance of within-group changes. The tables, charts, and brief narratives provided on the following pages present the findings of these analyses. Results of the ANOVAs are presented first, followed by *t* test results.

### WESTEST mathematics ANOVA results

*All subgroups combined results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been met ($\chi^2 = 9.41$, $p > .40$). The Time x Group interaction was not significant, $F(2, 4) = 1.26$, $p = .439$, $\eta^2 = .054$. The main effect for group was not significant either $F(2, 1) = .621$, $p = .439$, $\eta^2 = .027$. However, the main effect for time was significant, $F(2, 4) = 12.098$, $p < .000$, $\eta^2 = .355$ (Table 3).

**Table 3. All Subgroups Combined—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Mathematics Performance, 2004-2008**

| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| Main (time) | 1846.01 | 4 | 461.50 | 12.10 | 0.00 | 0.35 |
| Main (group) | 320.27 | 1 | 320.27 | 0.62 | 0.44 | 0.03 |
| Interaction (time*group) | 192.88 | 4 | 48.22 | 1.26 | 0.29 | 0.05 |

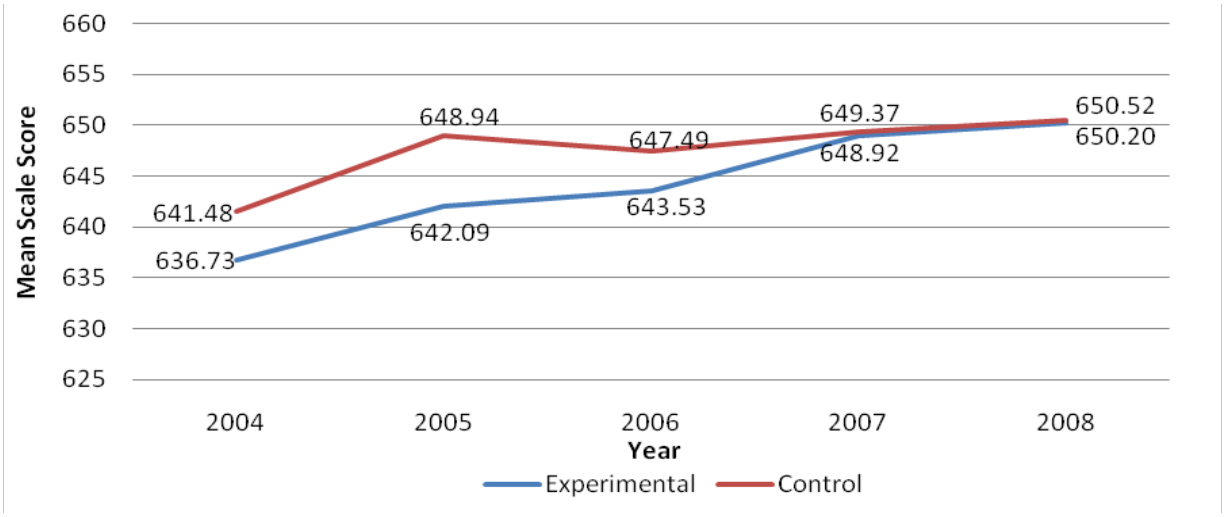
Table 4 and Figure 1 indicate that some change occurred in mathematics mean scale scores for the experimental group (12 schools having CAG liaisons) from 2004 to 2008. The performance gap between experimental and control group schools narrowed to the point of having only a small gap (0.32 mean scale score points) remaining in 2008—down from a gap of 4.75 mean scale score points in 2004. This performance gap narrowing suggests that the

presence of the CAG liaison within the experimental group schools over the 5-year period may have had a positive effect on all students' performance. This small change in performance may warrant further research.

**Table 4. All Subgroups Combined—Fourth-Grade WESTEST Mathematics Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (Schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 12 | 636.73 | 12.60 |
| | Control | 12 | 641.48 | 12.10 |
| 2005 | Experimental | 12 | 642.09 | 9.93 |
| | Control | 12 | 648.94 | 12.21 |
| 2006 | Experimental | 12 | 643.53 | 11.50 |
| | Control | 12 | 647.49 | 11.56 |
| 2007 | Experimental | 12 | 648.92 | 7.78 |
| | Control | 12 | 649.37 | 16.53 |
| 2008 | Experimental | 12 | 650.20 | 6.63 |
| | Control | 12 | 650.52 | 11.82 |

**Figure 1. All Subgroups Combined—Change in Fourth-Grade WESTEST Mathematics Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

*Black subgroup results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2$= 20.34, $p$ <.02), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of

sphericity (Ɛ =0.73). The Time x Group interaction was not significant, $F(2, 2.685) = .942$, $p = .418$, $\eta^2 = .04$. The main effect for group was not significant either $F(2, 1) = .335$, $p = .569$, $\eta^2 = .01$. However, the main effect for time was significant, $F(2, 2.685) = 8.448$, $p < .000$, $\eta^2 = .28$ (Table 5).

**Table 5. Black Subgroup—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Mathematics Performance, 2004-2008**

| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| Main (time) | 3933.91 | 2.68 | 1465.11 | 8.45 | .000 | 0.28 |
| Main (group) | 194.26 | 1.00 | 194.26 | 0.34 | .569 | 0.01 |
| Interaction (time*group) | 438.78 | 2.68 | 163.42 | 0.94 | .418 | 0.04 |

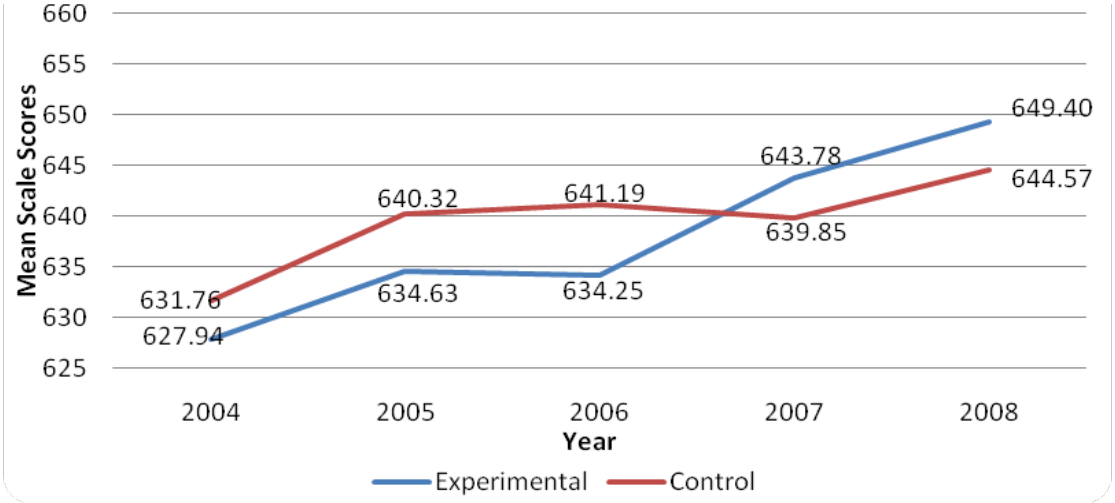
While there was no statistical significant difference between experimental schools and control schools for the Black subgroup, Table 6 and Figure 2 clearly indicate that some change did occur in the mathematics mean scale scores for the experimental group (10 schools having CAG liaison) from 2006 to 2008. Between 2006 and 2007, the Black subgroups in experimental group schools not only performed on an equivalent par with the control group schools, but actually surpassed those schools' Black subgroup performance. This change in mean scale scores suggests that the presence of the CAG liaison within the experimental schools over the 5-year period may have had a positive effect on Black students' performance. This change in student performance may warrant further research.

**Table 6. Black Subgroup—Fourth-Grade WESTEST Mathematics Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools)* | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 10 | 627.94 | 12.27 |
| | Control | 10 | 631.76 | 14.42 |
| 2005 | Experimental | 10 | 634.63 | 7.38 |
| | Control | 10 | 640.32 | 17.35 |
| 2006 | Experimental | 10 | 634.25 | 10.31 |
| | Control | 10 | 641.19 | 12.97 |
| 2007 | Experimental | 10 | 643.78 | 9.62 |
| | Control | 10 | 639.84 | 19.47 |
| 2008 | Experimental | 10 | 649.40 | 8.25 |
| | Control | 10 | 644.57 | 17.26 |

Note. *N=10 instead of 12 because two matched schools did not have 5 years of data for subgroup comparison.

**Figure 2. Black Subgroup—Change in Fourth-Grade WESTEST Mathematics Mean Scale Scores, 2004-2008**




Note. N=10 for both experimental and control groups instead of 12 because two matched schools did not have 5 years of data for subgroup comparison.

*Economically disadvantaged subgroup results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been met ($\chi^2$= 14.37, $p$ >.11). The Time x Group interaction was not significant, $F(2, 4) = .579$, $p = .679$, $\eta^2 = .026$. The main effect for group was not significant either $F(2, 1) = 1.139$, $p = .297$, $\eta^2 = .049$. However, the main effect for time was significant, $F(2, 4) = 3.669$, $p < .008$, $\eta^2 = .143$ (Table 7).

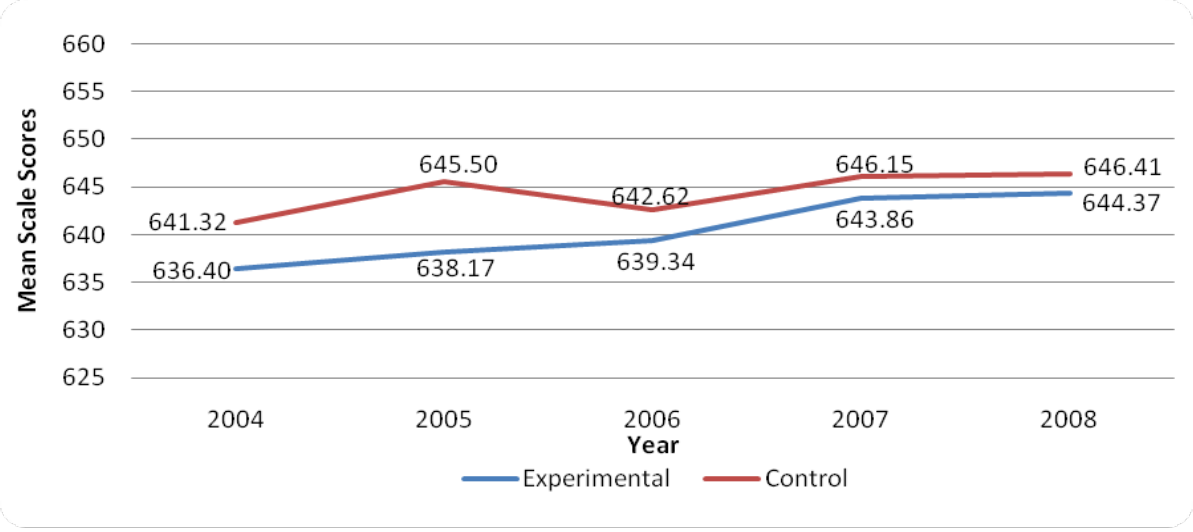
**Table 7. Economically Disadvantaged Subgroup—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Mathematics Performance, 2004-2008**

| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| Main (time) | 733.10 | 4 | 183.27 | 3.67 | .008 | 0.14 |
| Main (group) | 473.02 | 1 | 473.02 | 1.14 | .297 | 0.05 |
| Interaction (time*group) | 115.65 | 4 | 28.91 | 0.58 | .679 | 0.03 |

While there is no statistical significant difference between experimental schools and control schools, Table 8 and Figure 3 do suggest that some change did occur in mathematics mean scale scores for the experimental group from 2006 to 2008 for the economically disadvantaged subgroup. Each year following 2006 testing, the economically disadvantaged student performance gap narrowed between experimental and control group schools. For example, in 2007, the gap between the two groups was 2.29 mean scale score points and in

2008, that number decreased to a gap size of 2.04 mean scale score points. This represented an achievement gap decrease of 0.25 mean score points between the economically disadvantaged students in that 1-year period for experimental and control groups.

**Figure 3. Economically Disadvantaged Subgroup—Change in Fourth-Grade WESTEST Mathematics Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

**Table 8. Economically Disadvantaged Subgroup—Fourth-Grade WESTEST Mathematics Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 12 | 636.41 | 13.37 |
| | Control | 12 | 641.32 | 12.96 |
| 2005 | Experimental | 12 | 638.17 | 8.96 |
| | Control | 12 | 645.50 | 9.90 |
| 2006 | Experimental | 12 | 639.34 | 10.34 |
| | Control | 12 | 642.62 | 10.53 |
| 2007 | Experimental | 12 | 643.86 | 7.64 |
| | Control | 12 | 646.15 | 15.67 |
| 2008 | Experimental | 12 | 644.37 | 8.46 |
| | Control | 12 | 646.41 | 10.58 |

Overall, the performance gap between experimental and control group schools narrowed from 4.92 mean scale score points in 2004 to 2.04 mean scale score points in 2008; however, the control group schools continued to outperform the experimental group schools. This

performance gap narrowing suggests that the presence of the CAG liaison within the experimental group schools over the 5-year period may have had some positive effect on economically disadvantaged student performance. This change in performance may warrant further research.

*Students with disabilities subgroup results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been met ($\chi^2 = 13.45$, $p > .14$). The Time x Group interaction was not significant, $F(2, 4) = .223$, $p = .925$, $\eta^2 = .010$; nor was the main effect for group, $F(2, 1) = .008$, $p = .928$, $\eta^2 = .000$. However, the main effect for time was significant, $F(2, 4) = 8.710$, $p < .000$, $\eta^2 = .284$ (Table 9).

**Table 9. Students with Disabilities Subgroup—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Mathematics Performance, 2004-2008**

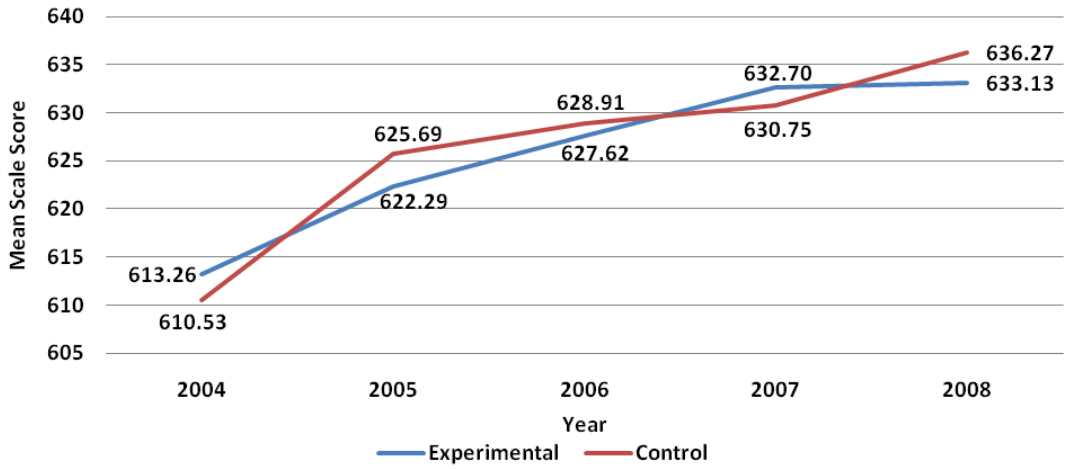
| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | η² |
|---|---|---|---|---|---|---|
| Main (time) | 7596.46 | 4 | 1899.12 | 8.71 | .000 | 0.28 |
| Main (group) | 11.90 | 1 | 11.90 | 0.01 | .928 | 0.00 |
| Interaction (time*group) | 194.37 | 4 | 48.59 | 0.22 | .925 | 0.01 |

Table 10 and Figure 4 suggest some interesting comparisons between the experimental schools and the control schools; however, it is not clear what impact the CAG liaison initiative might have had on the performance of students with disabilities within the treatment schools. For example, beginning in testing year 2004, the experimental schools outperformed the control group schools by 2.73 mean scale score points. The experimental group schools continued on an upward performance trajectory for the next 4 years with only a slight increase in performance between 2007 and 2008. Overall, the experimental schools increased their mean scale score by 19.87 points between 2004 and 2008. Despite this overall increase in performance, the achievement gap between experimental and control group schools widened to 3.14 mean scale score points in 2008, because the control group schools had increased their mean scale score by 25.74 points between 2004 and 2008. Thus, the achievement gap between treatment and control schools widened despite the placement of a CAG liaison in the treatment schools, suggesting that this initiative may not have had any appreciable positive impact on students with disabilities within the treatment schools.

**Table 10. Students with Disabilities Subgroup—WESTEST Fourth-Grade Mathematics Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 12 | 613.26 | 11.60 |
| | Control | 12 | 610.53 | 37.82 |
| 2005 | Experimental | 12 | 622.29 | 13.55 |
| | Control | 12 | 625.69 | 18.62 |
| 2006 | Experimental | 12 | 627.62 | 14.64 |
| | Control | 12 | 628.51 | 16.86 |
| 2007 | Experimental | 12 | 632.70 | 25.63 |
| | Control | 12 | 630.75 | 26.60 |
| 2008 | Experimental | 12 | 633.13 | 17.61 |
| | Control | 12 | 636.27 | 17.59 |

**Figure 4. Students with Disabilities Subgroup—Change in Fourth-Grade WESTEST Mathematics Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

## WESTEST reading/language arts results

*All subgroups combined results.*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2$= 23.39, $p$ <.006), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (Є= 0.60). The Time x Group interaction was not significant, $F(2, 2.415) = .466$, $p = .666$, $\eta^2 = .021$. The main effect for group was not significant either, $F(2, 1) = .921$, $p = .348$,

$\eta^2 = .040$. However, the main effect for time was significant, $F(2, 4) = 4.823$, $p < .001$, $\eta^2 = .180$ (Table 11).

**Table 11. All Subgroups Combined—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Reading/Language Arts Performance, 2004-2008**

| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| Main (time) | 1020.28 | 4.00 | 255.07 | 4.82 | .001 | 0.18 |
| Main (group) | 384.72 | 1.00 | 384.72 | 0.92 | .348 | 0.04 |
| Interaction (time*group) | 98.57 | 2.42 | 40.81 | 0.47 | .666 | 0.02 |

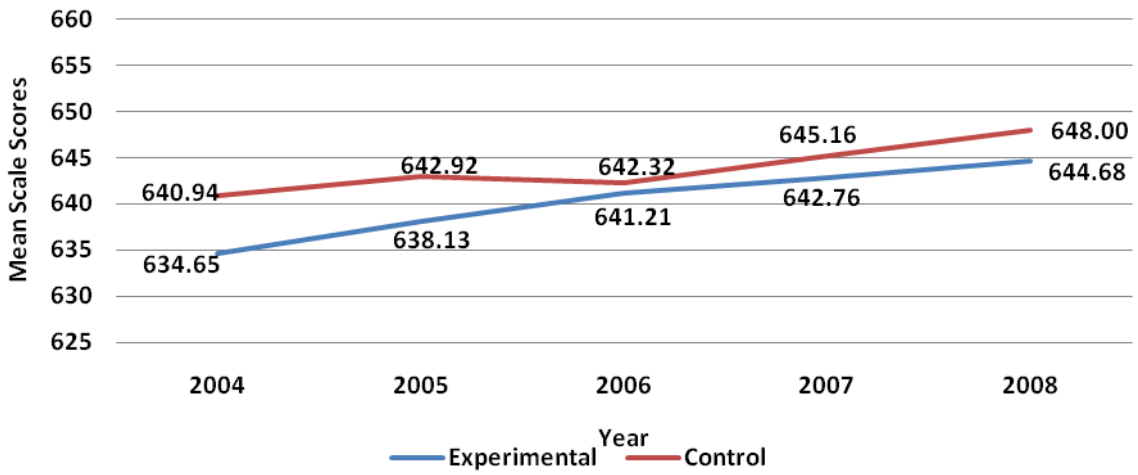
While Table 12 and Figure 5 reveal that the experimental schools were never able to close the performance gap with the control group schools, it is worth noting that the gap did narrow between 2004 and 2008. In testing year 2004, the control group schools (n=12) outperformed the experimental schools (n=12) by 6.29 mean scale score points. In 2008, the control group schools outperformed the experimental schools by only 3.32 mean scale score points. This represented a decrease in the achievement gap of 2.97 mean scale score points.

Over the 5 years (2004-2008) the experimental group schools increased their performance by 10.03 mean scale points while the control group increased their performance by only 7.06 mean scale points. These increases in student performance resulted in a narrowing of the performance gap; yet, the control group schools continued to outperform the experimental schools despite the placement of a CAG liaison within the treatment schools. This suggests that this initiative may have had only limited positive impact on all students within the treatment schools, i.e., experimental schools did increase mean scale scores between 2004-2008, but not to a degree that would close the achievement gap between the two groups of schools (experimental and control).

**Table 12. All Subgroups Combined—Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 12 | 634.65 | 16.47 |
| | Control | 12 | 640.94 | 13.00 |
| 2005 | Experimental | 12 | 638.13 | 8.85 |
| | Control | 12 | 642.92 | 12.00 |
| 2006 | Experimental | 12 | 641.21 | 9.47 |
| | Control | 12 | 642.32 | 12.02 |
| 2007 | Experimental | 12 | 642.76 | 8.72 |
| | Control | 12 | 645.16 | 12.78 |
| 2008 | Experimental | 12 | 644.68 | 6.96 |
| | Control | 12 | 648.00 | 8.56 |

**Figure 5. All Subgroups Combined—Change in Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

*Black subgroup results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2$= 28.01, $p$ <.001), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (Ɛ =0.64). The Time x Group interaction was not significant, $F(2, 2.571) = .252$, $p = .830$, $\eta^2 = .011$. The main effect for group was not significant either $F(2, 1) = .013$, $p = .912$, $\eta^2 = .001$. However, the main effect for time was significant, $F(2, 2.571) = 5.591$, $p < .003$, $\eta^2 = .203$ (Table 13).

**Table 13. Black Subgroup—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Reading/Language Arts Performance, 2004-2008**

| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | η² |
|---|---|---|---|---|---|---|
| Main (time) | 2372.88 | 2.57 | 922.95 | 5.59 | .003 | 0.20 |
| Main (group) | 3.64 | 1.00 | 3.64 | 0.01 | .912 | 0.00 |
| Interaction (time*group) | 107.01 | 2.57 | 41.62 | 0.25 | .830 | 0.01 |

Table 14 and Figure 6 reveal that while there were no statistically significant differences between the reading/language arts performance of the experimental schools and the control group, there were some interesting findings. For example, in examining the Black student achievement gap between the two groups of schools (experimental and control), the performance gap actually increased over the 5 years 2004-2008. In 2004, the performance gap

was 2.19 mean scale score points with the control group outperforming the experimental schools. In 2008, the performance gap increased to 5.0 mean scale score points with the experimental schools outperforming the control group schools.

Over the 5-year period (2004-2008), the experimental schools increased their performance by 13.96 mean scale score points with 7.71 of those points occurring between 2007 and 2008. Meanwhile, the control group schools increased their performance only 6.77 mean scale points over the 5 years (2004-2008). While both groups improved their academic performance over the 5 years, the experimental group schools had more than two times the increase in mean scale score points than the control group schools (7.71 points to 3.33 points respectively) between 2007 and 2008.

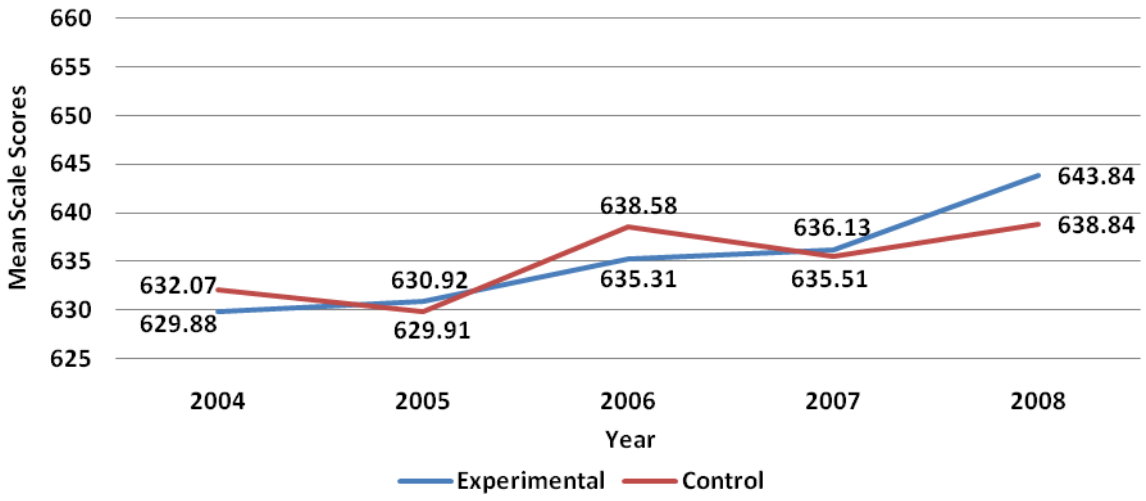
While it is unclear what prompted this bump in Black subgroup performance in the experimental schools between 2007 and 2008, it is possible that the addition of a CAG liaison into the treatment schools had some positive impact on the performance of Black students over the 5-year period. This change in performance may warrant further research.

**Table 14. Black Subgroup—Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 10 | 629.88 | 5.52 |
| | Control | 10 | 632.07 | 10.66 |
| 2005 | Experimental | 10 | 630.92 | 8.34 |
| | Control | 10 | 629.91 | 16.45 |
| 2006 | Experimental | 10 | 635.31 | 6.68 |
| | Control | 10 | 638.58 | 13.31 |
| 2007 | Experimental | 10 | 636.13 | 11.66 |
| | Control | 10 | 635.51 | 17.02 |
| 2008 | Experimental | 10 | 643.84 | 5.64 |
| | Control | 10 | 638.84 | 14.38 |

Note. N=10 instead of 12 because two matched schools did not have 5 years of data for subgroup comparison.

**Figure 6. Black Subgroup—Change in Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

*Economically disadvantaged subgroup results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2 = 37.04$, $p < .000$), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\epsilon = 0.51$). The Time x Group interaction was not significant, $F(2, 2.038) = .408$, $p = .671$, $\eta^2 = .018$; neither were the main effect for group $F(2, 1) = 2.22$, $p = .150$, $\eta^2 = .092$, or the main effect for time, $F(2, 2.038) = 1.583$, $p < .216$, $\eta^2 = .067$ (Table 15).

**Table 15. Economically Disadvantaged Subgroup—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Reading/Language Arts Performance, 2004-2008**

| Effect | Type III sum of squares | *df* | Mean square | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| Main (time) | 467.48 | 2.04 | 229.36 | 1.58 | .216 | 0.07 |
| Main (group) | 617.39 | 1.00 | 617.39 | 2.22 | .150 | 0.09 |
| Interaction (time*group) | 120.52 | 2.04 | 59.13 | 0.41 | .671 | 0.02 |

While there is no statistically significant difference between experimental and control schools, Table 16 and Figure 7 do indicate that both groups did have a small increase in mean scale score points for the economically disadvantaged students over the 5-year period (2004-2008). The experimental group schools had a total increase of 5.39 mean scale score points

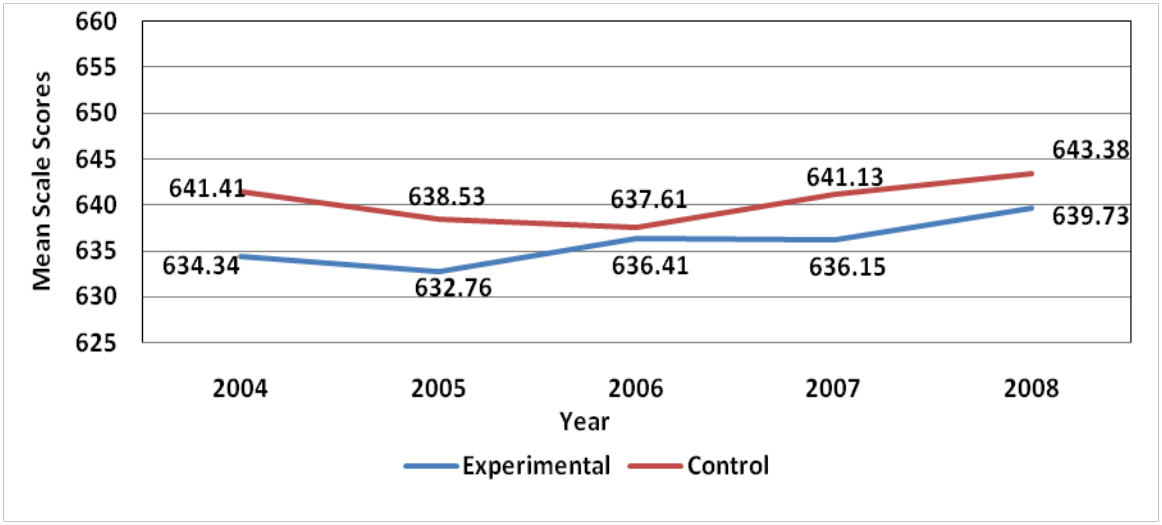
between 2004-2008 while the control group schools had a total increase of 1.97 mean score points between 2004-2008.

Throughout the entire 5-year period (2004-2008), a performance gap existed between the two groups of schools for the economically disadvantaged subgroup with the control group always outperforming the experimental group. The performance gap did narrow from 7.07 mean scale score points in 2004 to 3.65 mean scale score points in 2008—a decrease in the achievement gap of 3.42 points. This performance gap narrowing suggests that the presence of the CAG liaison within the experimental group schools over the 5-year period may have had a small positive effect on student performance; however, this impact was not enough to allow the experimental schools to catch up with or surpass the control group schools' performance. This small increase in performance over 5 years may warrant further research.

**Table 16. Economically Disadvantaged Subgroup—Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 12 | 634.34 | 17.57 |
| | Control | 12 | 641.41 | 13.43 |
| 2005 | Experimental | 12 | 632.76 | 6.71 |
| | Control | 12 | 638.53 | 8.71 |
| 2006 | Experimental | 12 | 636.41 | 6.93 |
| | Control | 12 | 637.61 | 11.73 |
| 2007 | Experimental | 12 | 636.15 | 9.56 |
| | Control | 12 | 641.13 | 13.27 |
| 2008 | Experimental | 12 | 639.73 | 6.33 |
| | Control | 12 | 643.38 | 6.58 |

**Figure 7. Economically Disadvantaged Subgroup—Change in Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

*Students with disabilities subgroup results*

Data were analyzed using a two-way ANOVA with repeated measures on one factor. Mauchly's test indicated that the assumption of sphericity had been met ($\chi^2$= 13.22, $p$ >.15). The Time x Group interaction was not significant, $F(2, 4) = 1.417$, $p = .235$, $\eta^2 = .061$. The main effect for group was not significant either $F(2, 1) = .897$, $p = .354$, $\eta^2 = .039$. However, the main effect for time was significant, $F(2, 4) = 3.244$, $p < .016$, $\eta^2 = .129$ (Table 17).

**Table 17. Students with Disabilities Subgroup—Two-Way Analysis of Variance Results for Time, Group, and Time x Group Interaction Effects on Fourth-Grade WESTEST Reading/Language Arts Performance, 2004-2008**

| Effect | Type III sum of squares | df | Mean square | F | p | $\eta^2$ |
|---|---|---|---|---|---|---|
| Main (time) | 4745.464 | 4 | 1186.37 | 3.24 | .016 | 0.13 |
| Main (group) | 1509.338 | 1 | 1509.34 | 0.90 | .354 | 0.04 |
| Interaction (time*group) | 2072.887 | 4 | 518.22 | 1.42 | .235 | 0.06 |

The presence of CAG liaisons within the experimental schools did not seem to ameliorate the problems that the students with disabilities subgroup had with academic performance in reading/language arts.

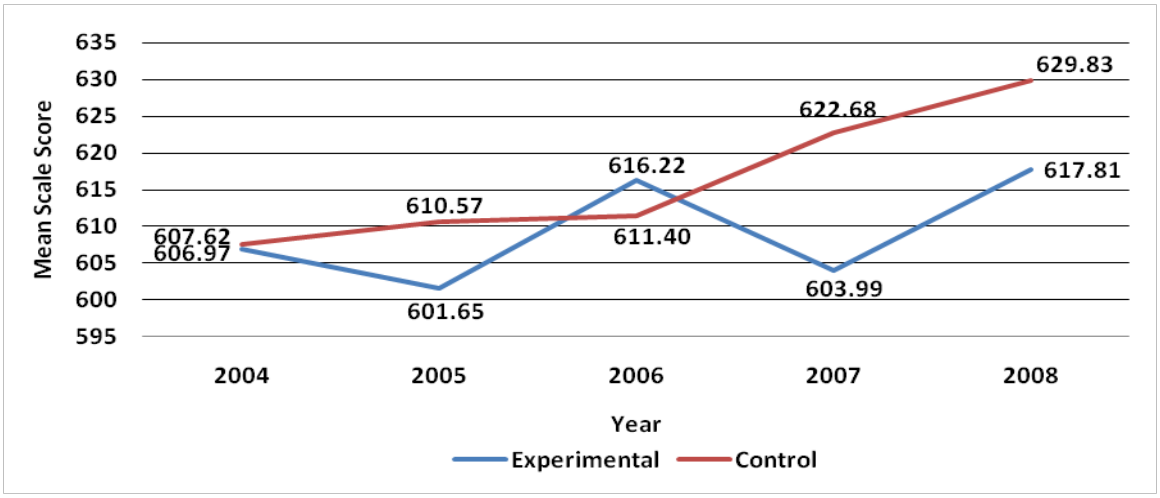
Table 18 and Figure 8 reveal that in 2004, the achievement gap between experimental schools and control group schools was 0.65 mean scale score points; however, by 2008, the performance gap had grown to 12.02 mean scale score points.

During the 5 years (2004-2008), the control group schools increased their mean scale score by 22.21 points. These 12 schools had a steady increase in performance over that time period with the largest point gain occurring from 2006-2008. On the other hand, the experimental group schools increased their mean scale score by only 10.84 points overall from 2004 to 2008, and at times those 12 schools were erratic in their performance. For example, the experimental schools decreased 5.32 mean scale score points between testing year 2004 and testing year 2005, increased 14.57 mean score points from 2005 to 2006, decreased 12.23 mean score points from 2006 to 2007, and finally increased 13.82 mean score points from 2007 to 2008. There did not appear to be a positive trend in overall performance for the experimental schools.

**Table 18. Students with Disabilities Subgroup— Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores and Standard Deviations, 2004-2008**

| Year | Group | N (schools) | Mean scale scores | Standard deviation |
|---|---|---|---|---|
| 2004 | Experimental | 12 | 606.97 | 13.62 |
| | Control | 12 | 607.62 | 26.12 |
| 2005 | Experimental | 12 | 601.65 | 11.54 |
| | Control | 12 | 610.57 | 29.70 |
| 2006 | Experimental | 12 | 616.22 | 17.59 |
| | Control | 12 | 611.40 | 23.41 |
| 2007 | Experimental | 12 | 603.99 | 44.74 |
| | Control | 12 | 622.68 | 21.90 |
| 2008 | Experimental | 12 | 617.81 | 22.93 |
| | Control | 12 | 629.83 | 20.86 |

**Figure 8. Students with Disabilities Subgroup—Change in Fourth-Grade WESTEST Reading/Language Arts Mean Scale Scores, 2004-2008**




Note. Experimental group (N=12) and control group (N=12)

## Summary of results of comparisons between experimental and control groups

The reader is reminded that, while every attempt was made to match experimental schools (those with a CAG liaison) with other similar schools for the control group, the research team was limited by the small number of schools in West Virginia that have substantial enrollments of both African American and economically disadvantaged students. Consequently, the baseline (2004) mean scale scores were not as similar as might be expected if schools were more closely matched. In all but one case—mathematics scores for students with disabilities (control = 610.53, experimental = 613.26)—the control group scores in 2004 were higher than the experimental group scores by approximately 1 to 7 mean scale score points. In this context, Table 19 presents an at-a-glance pictorial view of the overall findings from an analysis of mean scale scores.

An examination of this table quickly reveals that over the 5-year period 2004-2008, the Black subgroup was the only subgroup among the experimental schools to increase their academic performance—as reflected in fourth-grade WESTEST mathematics and reading/language arts mean scale scores—to the point that they caught up to or surpassed the mean scale scores of the control group schools. In WESTEST mathematics, this increase was especially noticeable from testing year 2004 to 2005 (6.69 mean score points); 2006 to 2007 (9.53 mean points); and 2007 to 2008 (5.62 mean points). From testing year 2005 to 2006, the Black subgroup increase was only 0.38 mean score points. In WESTEST reading/language arts, the primary increase was from testing year 2007 to 2008 (8.33 mean score points) causing the Black subgroup in experimental schools to outperform the control group schools.

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**Table 19. Summary of Mean Scale Score Analyses for Fourth-Grade WESTEST Mathematics and Reading/Language Arts Performance, 2004-2008**

| Subgroup | Experimental schools increased mean scale scores 2004-2008 | Experimental schools had larger increases in mean scale scores compared with control schools 2004-2008 | Experimental schools had smaller increases in mean scale scores compared with control schools 2004-2008 | Experimental schools caught up to or surpassed control schools in mean scale scores 2004-2008 |
|---|---|---|---|---|
| WESTEST Mathematics Performance 2004-2008 | | | | |
| All Subgroups Combined | ● | ● | | |
| Black | ● | ● | | ● |
| Economically Disadvantaged | ● | ● | | |
| Students with Disabilities | ● | | ● | |
| WESTEST Reading/Language Arts Performance 2004-2008 | | | | |
| All Subgroups Combined | ● | ● | | |
| Black | ● | ● | | ● |
| Economically Disadvantaged | ● | ● | | |
| Students with Disabilities | ● | | ● | |

Table 19 also reveals that, while the students-with-disabilities subgroup in the experimental schools achieved increased mean scale scores for mathematics and reading/language arts over the 5-year period, these increases were never enough to enable them to score at or above the level of the control group schools.

Both the all subgroups combined and economically disadvantaged subgroup in the experimental schools experienced increased mean scale scores from 2004 to 2008 on both assessments; however, even though these experimental subgroups made greater gains in their increased mean scale scores, they did not match or surpass the control group scores.

### Statistical significance of year-to-year changes in mean scale scores

In addition to conducting repeated measures, two-way ANOVAs that examined differences between the overall 5-year trend for experimental and control schools, WVDE researchers also conducted a series of independent *t* tests both *between* and *within* each of the groups. *Between-groups* analyses were conducted to determine if there were any significant differences between experimental and control schools for any single academic year. For example, a between-groups *t* test was used to determine if the 2004 mean scale score for experimental schools was significantly different from the 2004 mean scale score for control schools. These analyses were completed for all 5 years for all four subgroups (i.e., 40 total tests).

Next, WVDE researchers conducted a series of within-groups *t* tests to determine whether any year-to-year differences in mean scale scores were significantly different for either of the two groups (i.e., experimental and control). For example, a within-groups *t* test was used to determine if the 2004 and 2005 mean scale scores for the experimental group were significantly different. These analyses were completed for all possible year-to-year combinations for both the experimental and control groups (i.e., 160 total tests).

Table 20 presents the mean scale score for both experimental and control schools as well as the delta (i.e., difference) between the groups. Reading down each column illustrates the within-groups differences. Reading across the table rows illustrates the between-group differences.

**Table 20. Comparison of Within-Group and Between-Group Experimental and Control Mean Scale Scores for Fourth-Grade WESTEST Mathematics and Reading/Language Arts Assessment, by Subgroup, 2004-2008**

| | All mathematics | | | | Black mathematics | | | | Low-SES mathematics | | | | SWD mathematics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Exp | Cont | Delta | Year | Exp | Cont | Delta | Year | Exp | Cont | Delta | Year | Exp | Cont | Delta |
| 2004 | 636.73 | 641.48 | -4.75 | 2004 | 627.94 | 631.76 | -3.82 | 2004 | 636.40 | 641.32 | -4.92 | 2004 | 613.26 | 610.53 | 2.73 |
| 2005 | 642.09 | 648.94 | -6.85 | 2005 | 634.63 | 640.32 | -5.69 | 2005 | 638.17 | 645.5 | -7.33 | 2005 | 622.29 | 629.69 | -7.40 |
| 2006 | 643.53 | 647.49 | -3.96 | 2006 | 634.25 | 641.19 | -6.94 | 2006 | 639.34 | 642.62 | -3.28 | 2006 | 627.62 | 628.91 | -1.29 |
| 2007 | 648.92 | 649.37 | -0.45 | 2007 | 643.78 | 639.85 | 3.93 | 2007 | 643.46 | 646.15 | -2.69 | 2007 | 632.70 | 630.75 | 1.95 |
| 2008 | 650.2 | 650.52 | -0.32 | 2008 | 649.40 | 644.57 | 4.83 | 2008 | 644.37 | 646.41 | -2.04 | 2008 | 633.13 | 636.27 | -3.14 |
| | All RLA | | | | Black RLA | | | | Low-SES RLA | | | | SWD RLA | | |
| Year | Exp | Cont | Delta | Year | Exp | Cont | Delta | Year | Exp | Cont | Delta | Year | Exp | Cont | Delta |
| 2004 | 634.65 | 640.94 | -6.29 | 2004 | 629.88 | 632.07 | -2.19 | 2004 | 634.34 | 641.41 | -7.07 | 2004 | 609.97 | 607.62 | 2.35 |
| 2005 | 638.13 | 642.92 | -4.79 | 2005 | 630.92 | 629.91 | 1.01 | 2005 | 632.76 | 638.53 | -5.77 | 2005 | 601.65 | 610.57 | -8.92 |
| 2006 | 641.21 | 642.32 | -1.11 | 2006 | 635.31 | 638.58 | -3.27 | 2006 | 636.41 | 637.61 | -1.20 | 2006 | 616.22 | 611.40 | 4.82 |
| 2007 | 642.76 | 645.16 | -2.40 | 2007 | 636.13 | 635.51 | 0.62 | 2007 | 636.15 | 641.13 | -4.98 | 2007 | 603.99 | 622.68 | -18.69 |
| 2008 | 644.68 | 648.00 | -3.32 | 2008 | 643.84 | 638.84 | 5.00 | 2008 | 639.73 | 643.38 | -3.65 | 2008 | 617.81 | 629.83 | -12.02 |

Note. Exp = Experimental group (i.e., schools with a CAG liason); Cont = Control group schools; Low-SES = Economically disadvantaged; SWD = Students with disabilities; RLA = Reading/language arts.

None of the 40 between-groups *t* tests returned significant results. That is to say, there were no statistically significant differences between the experimental and control groups when looking at each year in isolation. Appendix A contains a list of *t* test results for these analyses for each subgroup (see Tables A1-A40 which present tests of *H0 1 – H0 40*).

Several of the within-groups *t* tests returned significant results. That is, there were several statistically significant differences when examining year-to-year differences within both the experimental and control groups. Table 21 presents the results of the *t* tests that were

statistically significant for WESTEST mathematics scores within the experimental group.[4] Notably, the differences between 2004 and 2008 for experimental schools were statistically significant for three of the four subgroups under examination. The only group for which this difference was not statistically significant was the economically disadvantaged subgroup. However, this group did experience a statistically significant increase when comparing the 2005 scale score to 2007. These data are not sufficient to make causal claims, but it is important to note the statistically significant and positive differences over time for these groups.

**Table 21. Statistically Significant Gains in Fourth-Grade WESTEST Mathematics Scores within the Experimental Group by Subgroup, 2004-2008**

| Subgroup | Years compared | Scale score Gains | Appendix/table reference |
|---|---|---|---|
| All groups combined | 2004 to 2005 | 5.36 | A41 |
| All groups combined | 2004 to 2006 | 6.8 | A42 |
| All groups combined | 2004 to 2007 | 12.19 | A43 |
| All groups combined | 2004 to 2008 | 13.47 | A44 |
| All groups combined | 2005 to 2007 | 6.83 | A46 |
| All groups combined | 2005 to 2008 | 8.11 | A47 |
| All groups combined | 2006 to 2007 | 5.39 | A48 |
| All groups combined | 2006 to 2008 | 6.67 | A49 |
| Black | 2004 to 2005 | 6.69 | A51 |
| Black | 2004 to 2006 | 6.31 | A52 |
| Black | 2004 to 2007 | 15.84 | A53 |
| Black | 2004 to 2008 | 21.46 | A54 |
| Black | 2005 to 2007 | 9.15 | A56 |
| Black | 2005 to 2008 | 14.77 | A57 |
| Black | 2006 to 2007 | 9.53 | A58 |
| Black | 2006 to 2008 | 15.15 | A59 |
| Economically disadvantaged | 2005 to 2007 | 5.69 | A66 |
| Students with disabilities | 2004 to 2005 | 9.03 | A71 |
| Students with disabilities | 2004 to 2006 | 14.36 | A72 |
| Students with disabilities | 2004 to 2007 | 19.44 | A73 |
| Students with disabilities | 2004 to 2008 | 19.87 | A74 |

Note. Statistical significance determined using *t* tests. See referenced tables in the Appendix for full *t* test results.

Table 22 presents the results of the *t* tests that were statistically significant for fourth-grade WESTEST reading/language arts scale scores within the experimental group. These

[4] In the interest of brevity, the results for control schools have been resigned to Appendix A.

differences were statistically significant when examining six year-to-year pairings. The differences between 2004 and 2008 were statistically significant and positive for all subgroups combined and the Black subgroup, but not for the students with disabilities or economically disadvantaged subgroups. However, the difference between 2005 and 2008 was significant for the economically disadvantaged subgroup. Notably, there were no year-to-year significant differences for the students with disabilities subgroup in experimental schools.

**Table 22. Statistically Significant Gains in Fourth-Grade WESTEST Reading/Language Arts Scores within the Experimental Group by Subgroup, 2004-2008**

| Subgroup | Years compared | Scale score gains | Appendix/table reference |
|---|---|---|---|
| All groups combined | 2004 to 2008 | 10.03 | A84 |
| All groups combined | 2005 to 2008 | 6.55 | A87 |
| Black | 2004 to 2008 | 13.95 | A94 |
| Black | 2005 to 2008 | 12.92 | A97 |
| Black | 2006 to 2008 | 8.52 | A99 |
| Low-SES | 2005 to 2008 | 6.97 | A107 |

Note. Statistical significance determined using *t* tests. See referenced tables in the Appendix for full *t* test results.

## Research Question 2

*To what extent have CAG schools closed the achievement gap for Black, special education and economically disadvantaged students when compared with achievement of all students in the state of West Virginia?*

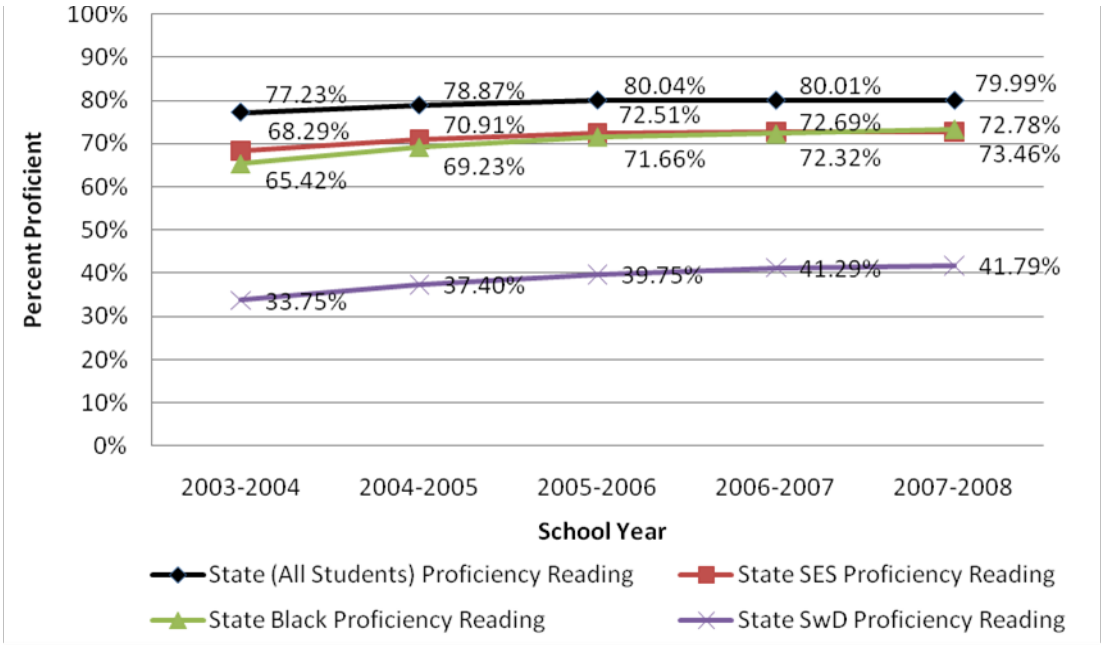
As noted in the methodology section, WVDE researchers also conducted a series of *post hoc* descriptive analyses comparing the percentage of students in all grade levels achieving at *Proficiency*—which includes those students who scored at Mastery, Above Mastery, and Distinguished—at all 26 CAG schools with the statewide percentage. The purpose of these analyses was to provide additional information about the extent to which CAG schools narrowed the achievement gaps that existed between subgroups of interest and the population of all students in West Virginia. What follows are brief narrative explanations of these data, followed by graphical representations.

### Closing the achievement gap in reading/language arts

Figure 9 presents the reading/language arts achievement trends among all WV students in non-CAG schools (i.e., the remainder of the state). Results are presented by all groups combined and by subgroup (Black, economically disadvantaged, and students with disabilities). These data serve as a point of comparison for students in CAG schools. The top trend line in Figure 9 indicates that, statewide proficiency levels increased slightly between 2004 and 2006 (77.23% to 80.04%) but exhibited a plateau for years 2007 and 2008 (80.01% and 79.99%). Economically disadvantaged and Black students exhibited similar achievement gaps in 2004 when compared to the state (-8.94% and -11.81%, respectively). That achievement gap decreased to -7.21% for economically disadvantaged students and -6.53% for Black students in 2008. This

indicates that Black students' rate of improvement exceeded that of economically disadvantaged students across the state. Students with disabilities exhibited the greatest achievement gap (-43.48%) in 2004, which decreased to -38.20% in 2008.

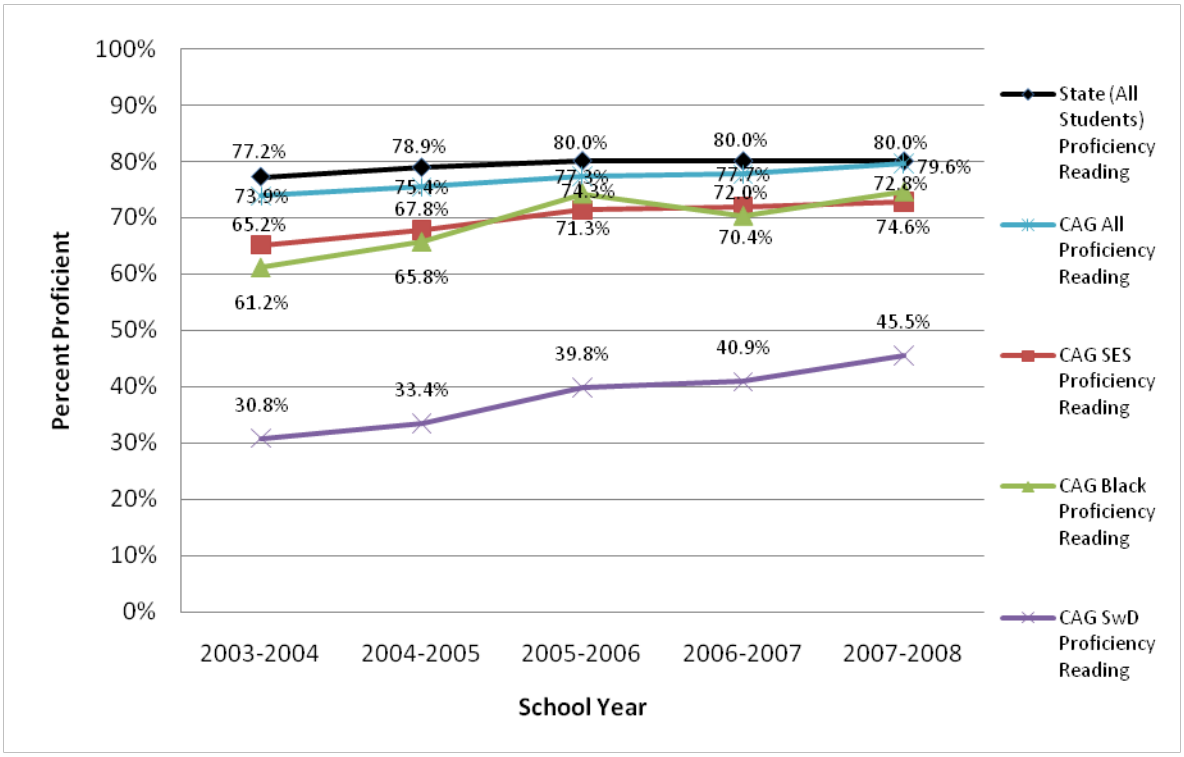
**Figure 9. Trends in the Percentage of Students Scoring at Proficiency in WESTEST Reading/Language Arts in all West Virginia (Non-CAG) Schools, 2004-2008**




Note. SES = Economically disadvantaged; SwD = Students with disabilities

Figure 10 depicts the comparison in reading/language arts achievement trends among all students in the CAG schools, all students in non-CAG schools (i.e., the remainder of the state), and the subgroups of interest in CAG schools (Black, economically disadvantaged and students with disabilities). The top two trend lines in Figure 10 indicate that all students in CAG schools, on average, exhibited an achievement gap of approximately -3.37% in 2004, but closed that gap to -0.41% by 2008. Economically disadvantaged students and Black students exhibited an even greater achievement gap in 2004 when compared to the state (-12.06% and -16.02%, respectively). However, that achievement gap decreased to -7.24% for economically disadvantaged students and -5.35% for Black students in 2008, indicating that *Black students' rate of improvement in CAG schools exceeded that of economically disadvantaged students and exceeded the rate of improvement of both Black and economically disadvantaged students in non-CAG schools*. However, it is important to note that the Black and economically disadvantaged student populations overlap, making generalizations difficult. Students with disabilities exhibited the greatest achievement gap (-46.39%) in 2004, which decreased to -34.51% in 2008. This indicates that students with disabilities in CAG schools outperformed non-CAG students with disabilities with respect to proficiency score increases in reading/language arts (please refer to Figure 9).

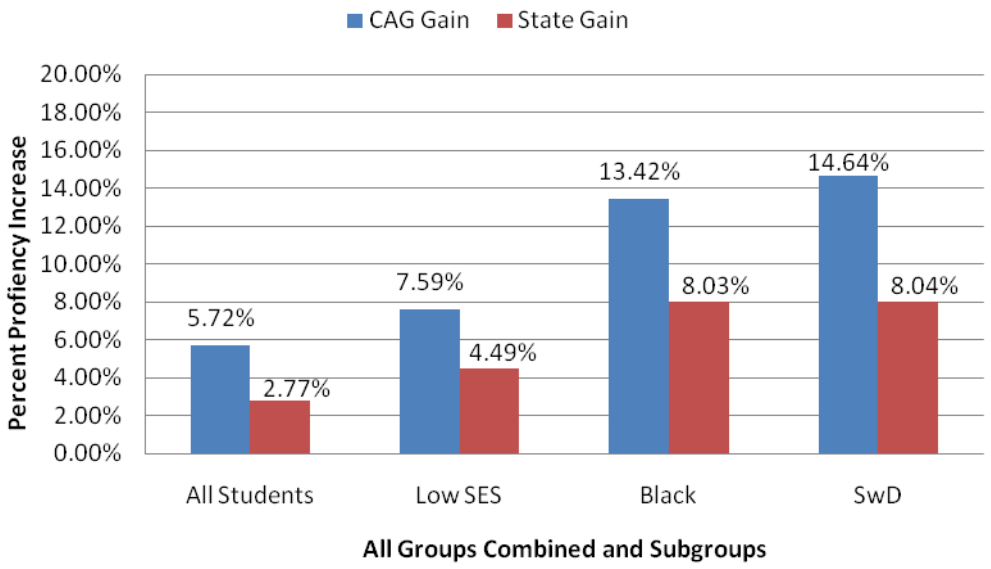
**Figure 10. Trends in the Percentage of Students Scoring at Proficiency in WESTEST Reading/Language Arts, in CAG Schools (Subgroups and All Groups Combined) Compared with All Groups Combined in All West Virginia (Non-CAG) Schools**




Note. SES = Economically disadvantaged; SwD = Students with disabilities

Figure 11 depicts the differences in reading/language arts proficiency improvements between all groups combined in CAG and non-CAG schools, as well as differences in proficiency improvements between subgroups of interest (economically disadvantaged, Black, and students with disabilities) in CAG and non-CAG schools.

**Figure 11. Differences between WESTEST Reading/Language Arts Achievement Gains in CAG Schools (Subgroups and All Groups Combined) and All West Virginia (Non-CAG) Schools from 2004 to 2008**



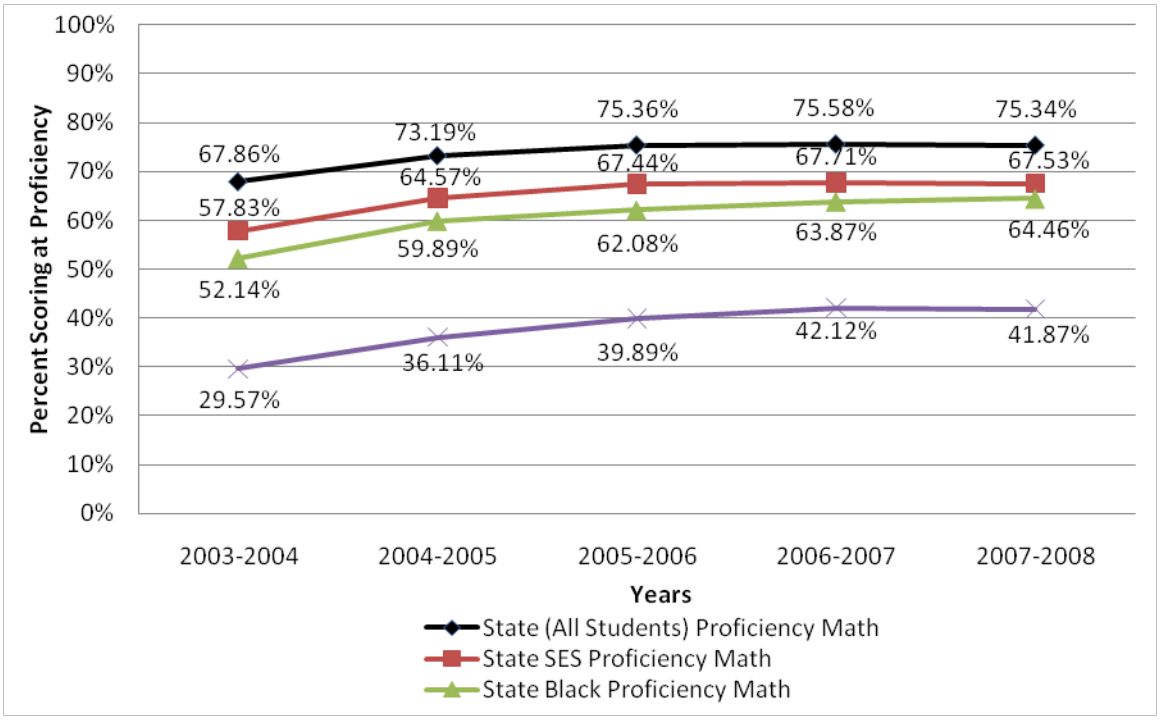

Note. SES = Economically disadvantaged; SwD = Students with disabilities

Notably, the proficiency increase in CAG schools was higher than the state in all cases. Although the proficiency increase between all students in CAG and non-CAG schools only differed by +2.95%, the proficiency increases among subgroups were higher. *Economically disadvantaged students in CAG and non-CAG schools exhibited the smallest difference in improvement (i.e., +3.10%), whereas students with disabilities in CAG and non-CAG schools exhibited the largest difference in improvement (i.e., +6.6%). Black students in CAG and non-CAG schools exhibited the second highest difference in improvement (i.e., +5.39%).*

## Closing the achievement gap in mathematics

Figure 13 presents the mathematics achievement trends among all WV students in non-CAG schools (i.e., the remainder of the state). Results are presented by all subgroups combined and by the three subgroups (Black, economically disadvantaged, and students with disabilities). These data will serve as a point of comparison for students in CAG schools.

**Figure 12. Trends in the Percentage of Students Scoring at Proficiency in WESTEST Mathematics in all West Virginia (Non-CAG) Schools, 2004-2008**

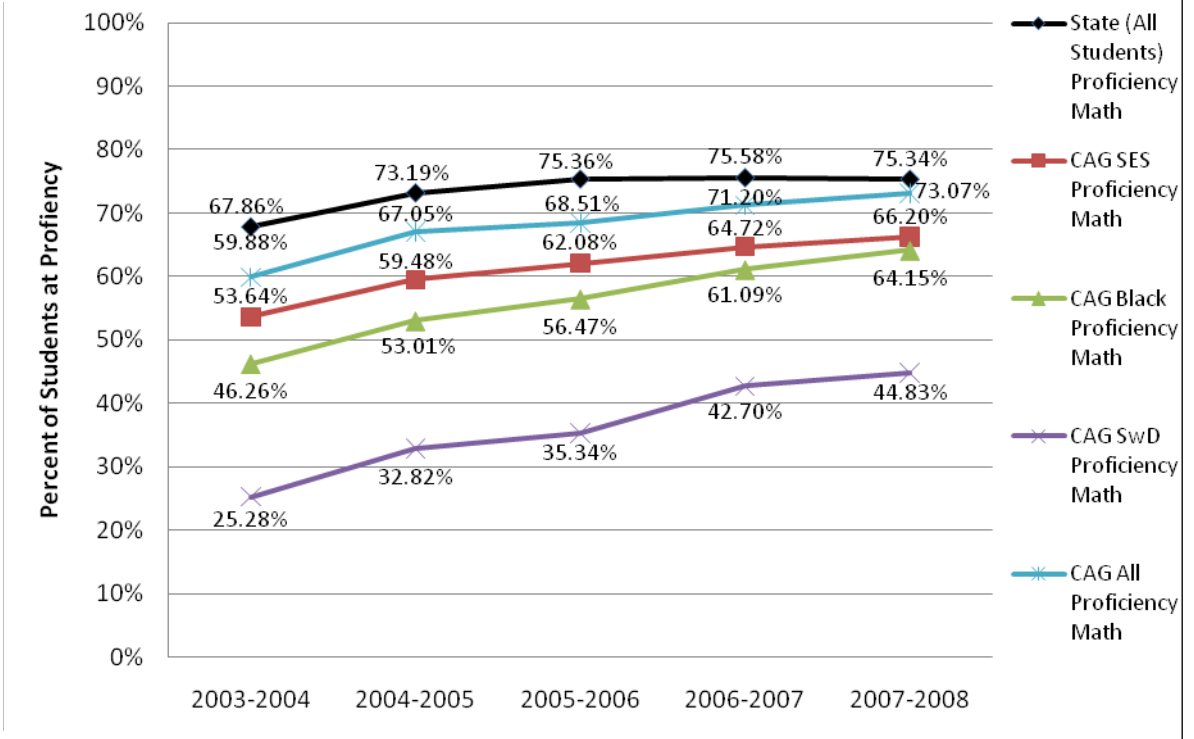



Note. SES = Economically disadvantaged; SwD = Students with disabilities

The first (top) trend line in Figure 13 indicates that statewide proficiency increased slightly between 2004 and 2006 (i.e., 67.86% to 75.36%) and exhibited a plateau for years 2007 and 2008 (i.e., 75.58% and 75.34%). Economically disadvantaged students exhibited the smallest gap among the subgroups when compared to the state average with a difference of -10.03% in 2004, which decreased to -7.81% in 2008. Black students exhibited an even greater achievement gap in 2004 when compared to the state (i.e., -15.72%), which decreased to -10.88% in 2008. Again, the differences in proficiency scores from 2004 to 2008 indicate that in non-CAG schools, Black students' rates of improvement exceeded that of economically disadvantaged students in mathematics proficiency. Students with disabilities in non-CAG schools exhibited the greatest achievement gap (i.e., -38.29%) in 2004, which decreased to -33.47%.

Figure 13 depicts the comparison in mathematics achievement trends among all students in CAG schools, all students in non-CAG schools (i.e., the remainder of the state), and all of the subgroups of interest in the CAG schools.

**Figure 13. Trends in the Percentage of Students Scoring at Proficiency in WESTEST Mathematics, in CAG Schools (Subgroups and All Groups Combined) Compared with All Groups Combined in All West Virginia (Non-CAG) Schools**

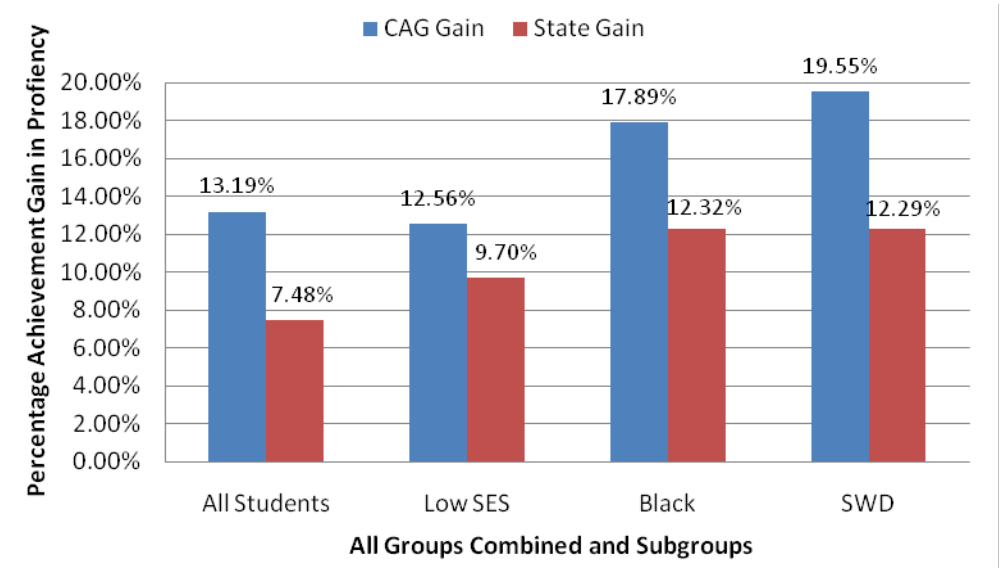



Note. SES = Economically disadvantaged; SwD = Students with disabilities

The first two trend lines in Figure 13 indicate that students in CAG schools, on average, exhibited a -7.98% deficit in mathematics proficiency scores in 2003 compared to the state average—more than double the reading/language arts deficit—but closed that gap to -2.27% by 2008. Economically disadvantaged students exhibited the smallest gap among the subgroups compared to the state average with a deficiency of -14.22% in 2004, which decreased to -9.14% in 2008. Black students exhibited an even greater achievement gap in 2004 when compared to the state (i.e., -21.6%), which decreased to -11.19% in 2008. Again, *the differences in proficiency scores indicate that Black students' rate of improvement exceeded that of economically disadvantaged students in mathematics proficiency. Further, these increases in proficiency exceeded the rate of improvement of economically disadvantaged and Black students in non-CAG schools* (see Figure 9). Students with disabilities exhibited the greatest achievement gap (i.e., -42.58%) in 2004, which decreased to -0.51% in 2008. Again, students with disabilities in CAG schools outperformed non-CAG students with disabilities in proficiency score improvement from 2004-2008 (see Figure 14 ).

Figure 14 depicts the differences in mathematics proficiency improvements between all students in CAG and non-CAG schools, as well as differences in proficiency improvements between subgroups in CAG and non-CAG subgroups of interest.

**Figure 14. Differences between WESTEST Mathematics Achievement Gains in CAG Schools (Subgroups and All Groups Combined) and All West Virginia (Non-CAG) Schools from 2004 to 2008**




Note. SES = Economically disadvantaged; SwD = Students with disabilities

As was the case with reading/language arts, the gains in CAG schools exceeded the state in all cases. The proficiency increase between all students in CAG and non-CAG schools differed by +5.71%; the proficiency increases among subgroups varied between +12.56% and +19.55%. *Economically disadvantaged students in CAG and non-CAG schools exhibited the smallest difference in improvement (i.e., +3.49%), whereas students with disabilities in CAG and non-CAG schools exhibited the largest difference in improvement (i.e., +7.26%). Black students in CAG and non-CAG schools exhibited the second highest difference in improvement (i.e., +5.57%).*

## Section II. Focus Group Results

### Research Question 3

*What has been the focus of the CAG liaisons over the course of the project and what do the liaisons perceive the impact of the program to be?*

Following the transcription of comments collected during the focus group sessions, the first stage of analysis involved reading and rereading each CAG liaison comment and assigning it to one of the six standards that guided the work of the CAGs, which produced the following results:

1. Bringing Focus—36 comments
2. Leading Change—4 comments
3. Developing Accountability—8 comments
4. Building Capacity—14 comments
5. Creating Community—11 comments
6. Growing Professionally—17 comments

Comments that did not fit into this organizing schema were coded into either the "General Information" and "Challenges/Successes" categories. A cursory look at the number of comments made about each of the standards suggests that during the 5 years of the CAG Schools program, the CAG liaisons focused their work more strongly on Standards 1, 4, and 6—which may also indicate which portion of their work the CAGs valued most.

In the second stage of analysis WVDE researchers examined comments categorized within each of the six standards and noted which ones had ideas or phrases that were repeated and formed themes. Table 23 displays the four themes for each standard that had the greatest number of comments (24 themes total). The third stage of analysis involved collapsing the 24 themes into five overall themes for discussion.

Thus, when CAG liaisons had a guided conversation concerning their roles within their schools and what they have accomplished within 5 years, it appears that they collectively view some roles and activities as being most important in their work with schools, administrators, teachers, and students. Their comments can be paraphrased in the following statements:

- Their work with schools must always result in increased student learning and achievement.
- Their work with teachers must instruct/inform them in how to focus their work on increased student learning and achievement.
- Their work with counties and schools must teach principals and other leaders how to increase open communication with all staff members.
- Their work with schools must result in staff members being asked their thoughts and having ownership of school improvement efforts.
- Their work with teachers must instruct them in how to use a variety of assessment data in making decisions related to instruction and student performance.
- Their work with teachers must facilitate all PD and include follow-up regarding use of that PD by teachers who were trained.

**Table 23. Six Guiding Standards and the Four Major Themes Associated With Each Standard**

| Standard 1 Bringing focus | Standard 2 Leading change | Standard 3 Developing accountability | Standard 4 Building capacity | Standard 5 Creating community | Standard 6 Growing professionally |
|---|---|---|---|---|---|
| Act as liaison and provide support for teachers, schools, and county administration | Writing school improvement plans | Helping school administration have better communication with staff | Mentoring principals—leading them to have open discussions with staff members—teach them how to accept criticism—suggest what the next work should be | Serve as liaison/link between school, county, and WVDE | Present at CAG Leadership Conference; facilitate training with Principal Leadership Conf. |
| Instruct in using all types of data—get teachers to focus on data | Use of research-based strategies/ techniques to improve student learning | Helping schools move from using only WESTEST data to using formative assessments including ISS | Building capacity for school improvement by increasing student learning | CAGs find resources and connect those resources to the schools that need them | Train teachers in teams and grade-level groups—may involve 3-4 schools, but with small-group focus |
| Focus on increased student learning/ achievement | Partnership activities such as being part of Management Team at county office | Helping schools in involving staff in ways to improve their schools | Building capacity in schools with tremendous staff turnover—help remaining staff to sustain the student improvement that has been made | CAGs guide the schools—not direct them—support schools in decisions | CAGs follow up on use of PD—mentor by building in-house leadership in administration and staff |
| Facilitate all teacher PD | Becoming part of the collective school "WE" | Helping schools have common goals for their improvement efforts | Work with superintendent—have access to him or her—take problems to that level | Help schools develop ownership—empower principals | CAG training involves meeting 10 days as cadre—share what is working—do own PD—share challenges—training is responsive to our needs |

**KEY:** 1. **BLUE** = increased student learning and achievement

2. **ROSE** = providing guidance and support to schools—not directing them
3. **LIME YELLOW** = increased open communication with school staff
4. **ORANGE** = CAG liaisons facilitate and follow-up with all teacher PD
5. **TURQUOISE** = focus on using data to drive instruction and assessment—all types of data

During the first two stages of data analysis, it became clear that some comments did not seem to fit neatly within any of the six standards. Those comments were then coded within two special categories, *General Information* and *Successes/Challenges*. Thirteen comments were categorized as General Information and 35 as Successes/Challenges.

CAG liaisons made many substantive comments under these two categories. For example, all of the CAGs noted that they had no preparation time throughout the day. All of their preparations to work with teachers, principals, or county administrators had to be completed on their own time during evenings and on weekends. This trend in CAG's comments suggests that they performed with a high level of dedication and commitment to their work.

Additionally, all of the CAGs reported that there was not what could be called a "typical" day at the schools. A day might start out working one-on-one with individual teachers on specific instructional strategies such as benchmarking or using techSteps, or it might involve having morning meetings with administrators; conducting a walk-through with a principal or other leader; mentoring a new principal (one CAG reported working with three schools that all had new principals); handling e-mails or dealing with areas of frustration for teachers or administrators; attending a team meeting with teachers; working with the principal and others to prepare for special education monitoring visits; mentoring a principal in how to conduct classroom/teacher observations, organize paperwork, or manage scheduling; working with professional learning communities (PLCs); leading a book study; working with the county to involve parents and community members, local churches, and community centers; providing training for teachers or following up on their use of the training materials/strategies; working with teachers in understanding the value of a variety of data and how to use those data to drive instruction and student learning; and so forth.

> *Some teachers ARE finding success in the classroom, which means that some students ARE also finding success, and the schools are feeling better.*
>
> *—CAG liaison*

One comment included in the General Information category was, "CAGs know they've made progress when the school's culture changes from one of insularity or blaming others—'us against them'—to one of openness, collaboration, and a focus on student achievement and solving self-identified problems." A second CAG liaison thought CAGs had scored a success rate of 8.5—9.0, but added that there was always room for growth, and that teachers must learn to use data to show that a program or process is successful.

> *CAGs know they've made progress when the school's culture changes from one of insularity or blaming others —us against them— to one of openness, collaboration, and focus on student achievement.*
>
> *—CAG liaison*

This theme of changes in school culture was also echoed in comments categorized as Successes/Challenges. For example, one CAG commented, "Maintaining a positive culture is hardest; it is easy for a culture to turn toxic." One CAG agreed and provided the example of an elementary school in one West Virginia county. He stated that the school at one time had been a nice community school, but school consolidation changed the demographics overnight and with that change the attitudes of some teachers declined. The school had been in an upper middle class neighborhood, but then low-income housing projects were introduced into the area; high-quality teachers began to leave and there was a genuine

concern over the exodus of these teachers. The principal, who was near retirement, expected the teachers to become a learning community, but he was not willing to push the envelope in order to make that happen. Now, that same school is one of the CAG schools' biggest successes. Recently, the WESTEST results came back with Black subgroup students outscoring White subgroup students. This was a great accomplishment in the 3rd year of the CAG liaison introduction into the school, and it was a direct result of that work with the staff and principal according to the CAG liaisons.

> *Maintaining a positive culture is hardest; it is easy for a culture to turn toxic.*
>
> *—CAG liaison*

The challenge of maintaining or creating a positive school culture was echoed by other CAGs as well, but others reported that the cultures of the schools had improved over the last 5 years. In the past, there were problems such as teachers yelling at their students; the school building not being clean; the principal seldom leaving his or her office; administration never checking on the restrooms; lack of communication from administration to the teachers; no morning announcements; teachers only receiving directives. This has changed to more open and clear communication.

CAGs pointed out that there are tremendous pressures on public schools today and schools often find little consistency in what they are required to do. The CAG liaisons try to reconcile or facilitate understanding of all of the information coming from the counties and state for the schools. One CAG commented on the difficulty of reconciling all the requirements of the state while still meeting the needs of children. Also, people feel pressure about how to get everything done with too little time in which to do it.

Along this same line, two CAGs reported feeling that their biggest success was that their schools were operating in the belief that it doesn't matter what is happening out there (within state, central office, etc.), but instead it mattered what the children needed to learn. One CAG liaison stated, "Some teachers ARE finding success in the classroom, which means that some students are also finding success, and the schools are feeling better."

In addition, several CAG liaisons reported that now schools and teachers are not making so many excuses for how their students are performing. Instead, the focus is more about how children can get the information/knowledge they need and how teachers can help children learn. In general, the CAGs seemed to think that each school was getting to the point that the important thing for them was that their students were all learners and that they continued to learn.

When they were asked how positive change had been facilitated in their schools, the CAGs responded with the following points:

- Talking about it
- Talking about improvement of instruction
- Using the process as instructed
- Networking between schools

- Attitude changes
- Cultural changes

When the CAG liaisons were asked about possible challenges or barriers to their work with schools, they responded with the following points:

- Getting in the door
- Time is a huge factor
- Money is an issue
- Lack of leadership or resistance to leadership
- Support can be a major barrier
- Retirements
- Challenge of maintaining a positive culture
- Multiple issues

Despite the challenges and barriers to their work, the CAGs overall thought they had made some important accomplishments over the last 5 years. CAGs reported having moved their schools from lecture-based teaching methods and models to other types of instructional methods. Additionally, CAGs reported making improvements in instructional teams by changing the way that meetings were conducted. Finally, the CAGs noted that they had increased the use of classroom assessments for learning, and that they had improved school collaborative relationships.

## Section III. Survey Results

### Research Question 4

*How do CAG schools compare with high performing learning communities in terms of continuous school improvement practices?*

As mentioned in the Research Methodology section of this report, to investigate RQ4, the WVDE researchers administered the Continuous School Improvement Questionnaire ([CSIQ] Meehan, et al., 2006). The CSIQ is a measure of schools' performance on seven dimensions critical to school improvement and contains 70 Likert-type response format items, which comprise seven distinct subscales: (a) Learning Culture, (b) School-Family-Community Connections, (c) Shared Leadership, (d) Shared Goals for Learning, (e) Purposeful Student Assessment, (f) Effective Teaching, and (g) Aligned and Balanced Curriculum. Scores on the survey are measured against other normative schools with similar characteristics (*average schools*), and against "high performing learning communities" (*HPLC schools*), which are schools that have received national recognition as schools of excellence, among other criteria that indicate commitment to continuous learning and improvement (Meehan et al., 2006). The survey was administered in CAG schools in 2006 at the outset of the project by an external contractor, Edvantia, Inc. WVDE researchers re-administered the instruments in 2010 as part of

the current evaluation. The following section presents the results of the 2010 administration of the CSIQ.

## Mean CSIQ scores for CAG schools

Descriptive data from the CSIQ are presented in the tables below disaggregated by programmatic level. It should be noted that the majority of CAG schools were elementary schools ($n$ = 13). Fewer were middle schools ($n$ =9) and high schools ($n$ =3). An additional school was identified as having an "other" configuration for the purposes of normative comparisons. This school was a PreK–8 configured school.

*Elementary schools*

In elementary schools, the mean score for CAG schools was consistently higher than the mean score for average schools in the norm-referenced sample. This was true for all seven subscales. In all subscales, however, the mean scores for CAG elementary schools were lower than the mean scores for norm-referenced elementary schools identified as HPLC schools (see Table 24).

**Table 24. Overall CSIQ Findings for CAG Elementary Schools, 2010.**

| | Mean scores | | | |
|---|---|---|---|---|
| Subscale | CAG schools | HPLC schools | Average schools | Conclusions |
| Learning culture | 49.69 | 51.25 | 47.28 | CAG schools **above** average but **below** HPLC mean. |
| School-family-community connections | 46.19 | 52.46 | 45.07 | CAG schools **above** average and **below** HPLC mean. |
| Shared leadership | 48.11 | 51.64 | 45.56 | CAG schools **above** average but **below** HPLC mean. |
| Shared Goals for Learning | 49.48 | 53.25 | 47.81 | CAG schools **above** average but **below** HPLC mean. |
| Purposeful student assessment | 49.43 | 53.14 | 47.16 | CAG schools **above** average but **below** HPLC mean. |
| Effective teaching | 49.59 | 53.08 | 48.89 | CAG schools **above** average but **below** HPLC mean. |
| Aligned and Balanced Curriculum | 47.11 | 49.81 | 43.58 | CAG schools **above** average but **below** HPLC mean. |

*Middle schools*

At the middle school level, the mean score for CAG schools was consistently higher than the mean score for average schools in the norm-referenced sample. This was true for all seven subscales. In all subscales, however, the mean scores for CAG middle schools were lower than the mean scores for norm-referenced middle schools identified as HPLCs (see Table 25).

**Table 25. Overall CSIQ Findings for CAG Middle Schools, 2010**

| Subscale | Mean scores: CAG schools | Mean scores: HPLC schools | Mean scores: Average schools | Conclusions |
|---|---|---|---|---|
| Learning culture | 47.00 | 50.14 | 45.79 | CAG schools **above** average but **below** HPLC mean. |
| School-family-community connections | 40.21 | 48.29 | 41.70 | CAG schools **below** average and **below** HPLC mean. |
| Shared leadership | 44.27 | 50.76 | 43.94 | CAG schools **above** average but **below** HPLC mean. |
| Shared Goals for Learning | 46.02 | 51.27 | 45.21 | CAG schools **above** average but **below** HPLC mean. |
| Purposeful student assessment | 45.19 | 50.88 | 44.53 | CAG schools **above** average but **below** HPLC mean. |
| Effective teaching | 46.89 | 50.77 | 46.35 | CAG schools **above** average but **below** HPLC mean. |
| Aligned and Balanced Curriculum | 42.18 | 48.29 | 41.70 | CAG schools **above** average but **below** HPLC mean. |

*High schools*

In high schools, the mean score for CAG schools was consistently lower than the mean score for both HPLCs and average schools in the norm-referenced sample (Table 26). In other words, CAG high schools included in the sample ($n$ =2) were falling short of the benchmarks set by both average high schools and those identified as HPLCs. It should be noted that the small number of high schools in the CAG sample could bias the mean score, if those schools are particularly low performing.

**Table 26. Overall CSIQ Findings for CAG High Schools, 2010**

| Subscale | Mean scores: CAG schools | Mean scores: HPLC schools | Mean scores: Average schools | Conclusions |
|---|---|---|---|---|
| Learning culture | 41.69 | 49.22 | 44.40 | CAG schools **below** average and **below** HPLC mean. |
| School-family-community connections | 33.54 | 49.01 | 40.88 | CAG schools **below** average and **below** HPLC mean. |
| Shared leadership | 37.04 | 50.32 | 42.71 | CAG schools **below** average and **below** HPLC mean. |
| Shared Goals for Learning | 41.26 | 49.82 | 43.80 | CAG schools **below** average and **below** HPLC mean. |
| Purposeful student assessment | 40.49 | 49.27 | 42.52 | CAG schools **below** average and **below** HPLC mean. |
| Effective teaching | 42.03 | 51.22 | 45.55 | CAG schools **below** average and **below** HPLC mean. |
| Aligned and Balanced Curriculum | 37.95 | 47.46 | 39.80 | CAG schools **below** average and **below** HPLC mean. |

*Other schools*

There was only one CAG school identified as having an *other* grade configuration. This school served students in grades Pre/K-8. The results of the CSIQ for this school indicated that the school was well above average schools in the norm-referenced sample (Table 27). There were no HPLCs in the norm-referenced sample to serve as a comparison for this CAG school. It should be noted that these results could be biased if the single CAG school in this sample is particularly high performing.

**Table 27. Overall CSIQ Findings for Other School (PreK through Grade 8), 2010**

| | Mean Scores | | | |
|---|---|---|---|---|
| Subscale | CAG schools | HPLC schools | Average schools | Conclusions |
| Learning culture | 53.25 | * | 45.10 | CAG schools **above** average mean. |
| School-family-community connections | 53.62 | * | 40.92 | CAG schools **above** average mean. |
| Shared leadership | 52.25 | * | 44.94 | CAG schools **above** average mean. |
| Shared Goals for Learning | 54.62 | * | 45.27 | CAG schools **above** average mean. |
| Purposeful student assessment | 55.37 | * | 43.65 | CAG schools **above** average mean. |
| Effective teaching | 53.62 | * | 47.14 | CAG schools **above** average mean. |
| Aligned and Balanced Curriculum | 54.86 | * | 40.17 | CAG schools **above** average mean. |

* No norm-referenced data were available for "other" configuration HPLCs.

## Norm-referenced CSIQ results for CAG schools

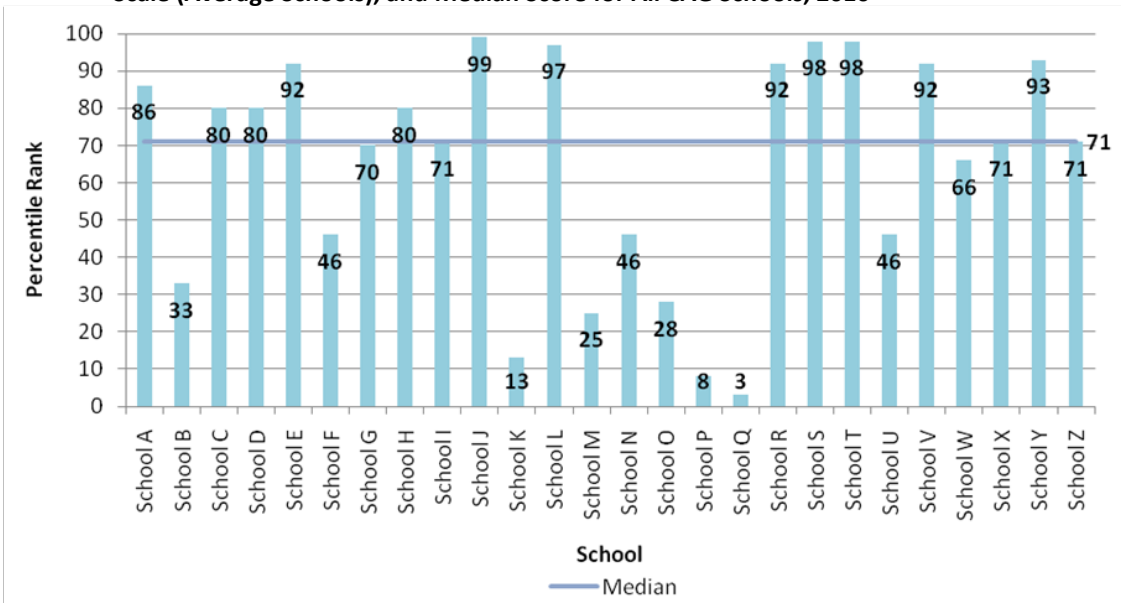
Figure 15 through Figure 21 illustrate the percentile rankings for each of the 26 CAG schools for each of the seven subscales (learning culture, school-family-community connections, etc.), which, as in Table 24 through Table 27 above, are derived by comparing the mean subscale score for each CAG school with data from a larger group of norm-referenced schools in the *CSIQ User Manual and Technical Report* (Meehan, et al., 2006). For this analysis, WVDE researchers compared each CAG school to the norm for Average (not HPLC) schools of the same programmatic level (e.g., elementary, middle, high, and other) on each of the subscales. Each bar represents the percentile rank for an individual CAG school. The line that crosses the bars on each chart represents the median percentile rank for all CAG schools. The median percentile serves as a summary measure of the rank of the CAG schools when they are aggregated into a single group. Interpretation is relatively straightforward. For example, if the median for CAG schools falls below the 50$^{th}$ percentile, this would mean that the CAG schools exhibited a CSIQ subscale score that was lower than 50% of the average norm-referenced schools.[5]

[5] All schools' identities were masked for these analyses.

*Learning culture*

The median percentile rank of CAG schools on the Learning Culture subscale was 71. In other words, only 29% of norm-referenced average schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program (Figure 15). Learning culture was the second-highest rated of the CSIQ subscales, indicating it as an area of strength for CAG schools. With respect to individual results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 97% of norm-referenced schools. School J exhibited the highest rank, with only 1% of norm-referenced schools scoring higher.

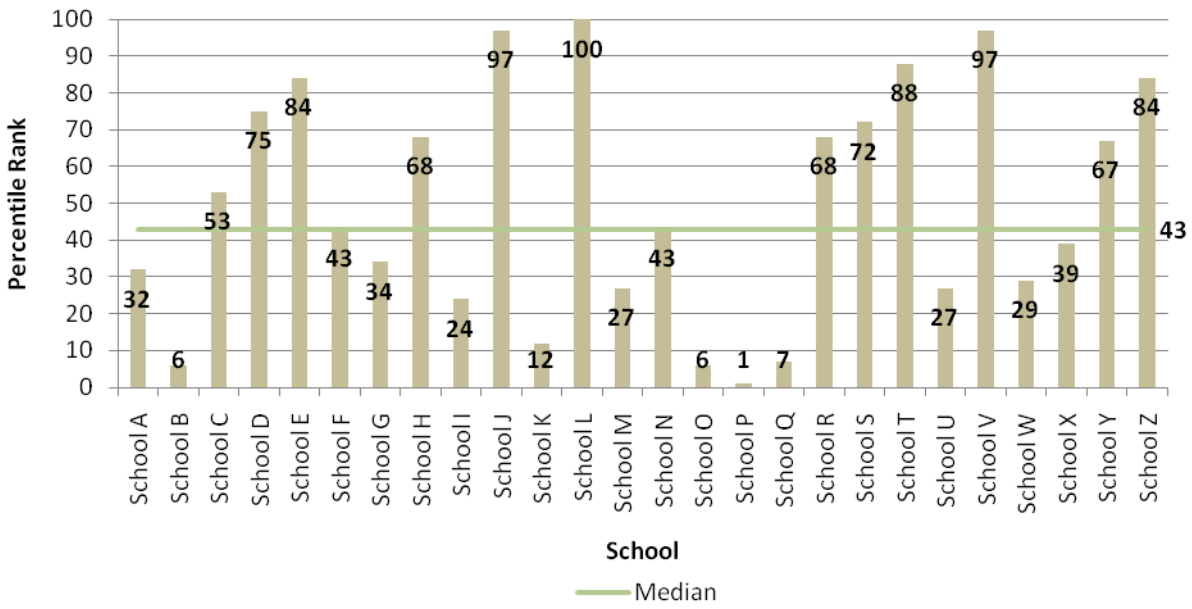
**Figure 15. Learning Culture—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**




*School-family-community connections*

The median percentile rank of CAG schools on the School-Family-Community Connections subscale was 43. In other words, 57% of norm-referenced average schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program (Figure 16). This was the lowest rated of the seven CSIQ subscales, indicating it as a critical area of concern for CAG schools. With respect to individual school results, School P exhibited the lowest percentile rank on the subscale, scoring lower than 99% of norm-referenced schools. School L exhibited the highest rank, outscoring all other norm-referenced schools.

**Figure 16. School-Family-Community Connections—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**




*Shared leadership*

The median percentile rank of CAG schools on the Shared Leadership subscale was 66. In other words, only 34% of norm-referenced schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program, indicating this to be an area of somewhat less concern than others for CAG schools (Figure 17). With respect to individual school results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 96% of norm-referenced schools. Schools L and S exhibited the highest ranks, with only 7% of norm-referenced schools scoring higher.

*Shared goals for learning*

The median percentile rank of CAG schools on the Shared Goals for Learning subscale was 66 (Figure 18). In other words, only 34% of norm-referenced average schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program, indicating it to be an area of somewhat less concern than others for CAG schools. School P exhibited the lowest percentile rank on the subscale, scoring lower than 95% of norm-referenced schools. School J exhibited the highest rank, with only 1% of norm-referenced schools scoring higher.

**Figure 17. Shared Leadership—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**

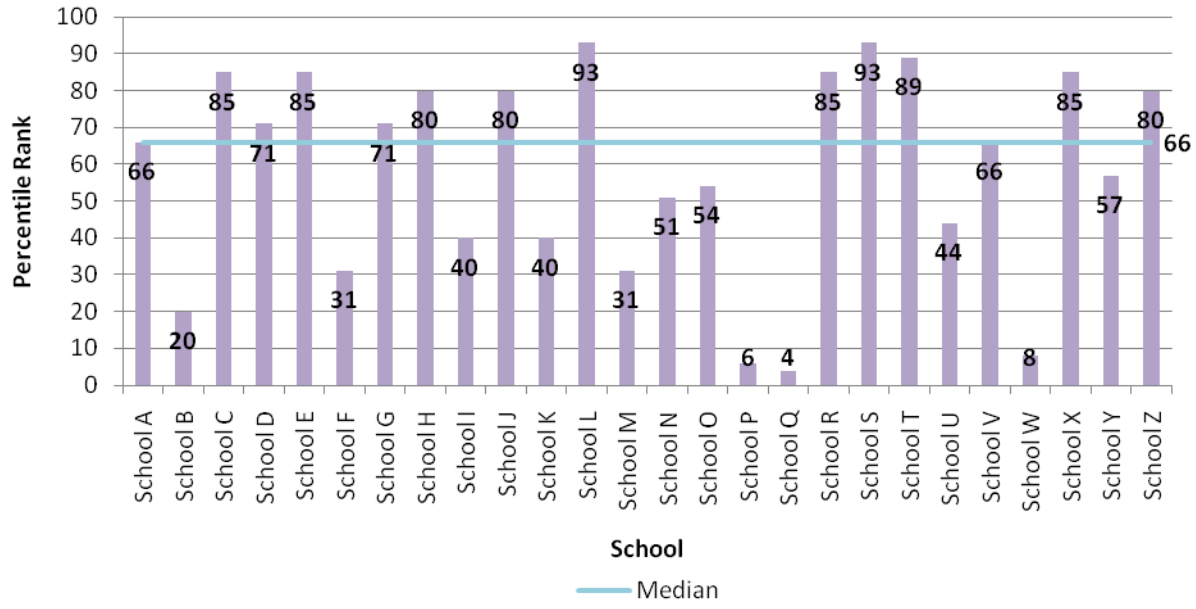
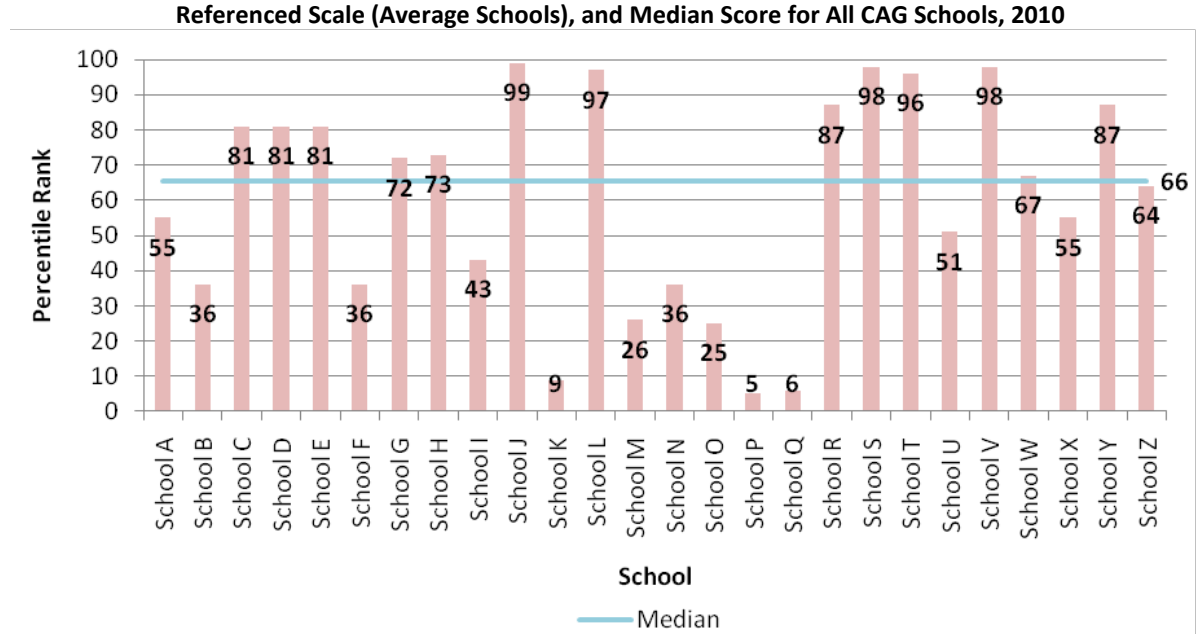


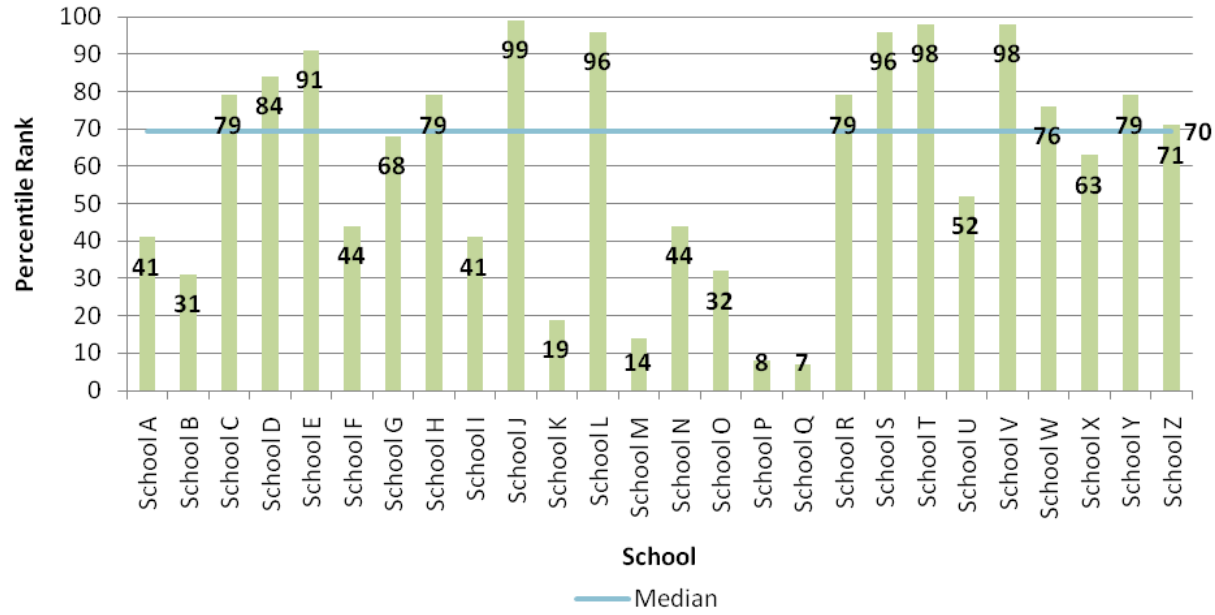

**Figure 18. Shared Goals for Learning—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**



*Purposeful student assessment*

The median percentile rank of CAG schools on the Purposeful Student Assessment subscale was 70. In other words, only 30% of norm-referenced average schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program, indicating this to be an area of strength for CAG schools (Figure 19). With respect to individual school results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 93% of norm-referenced schools. School J exhibited the highest rank, with only 1% of norm-referenced schools scoring higher.

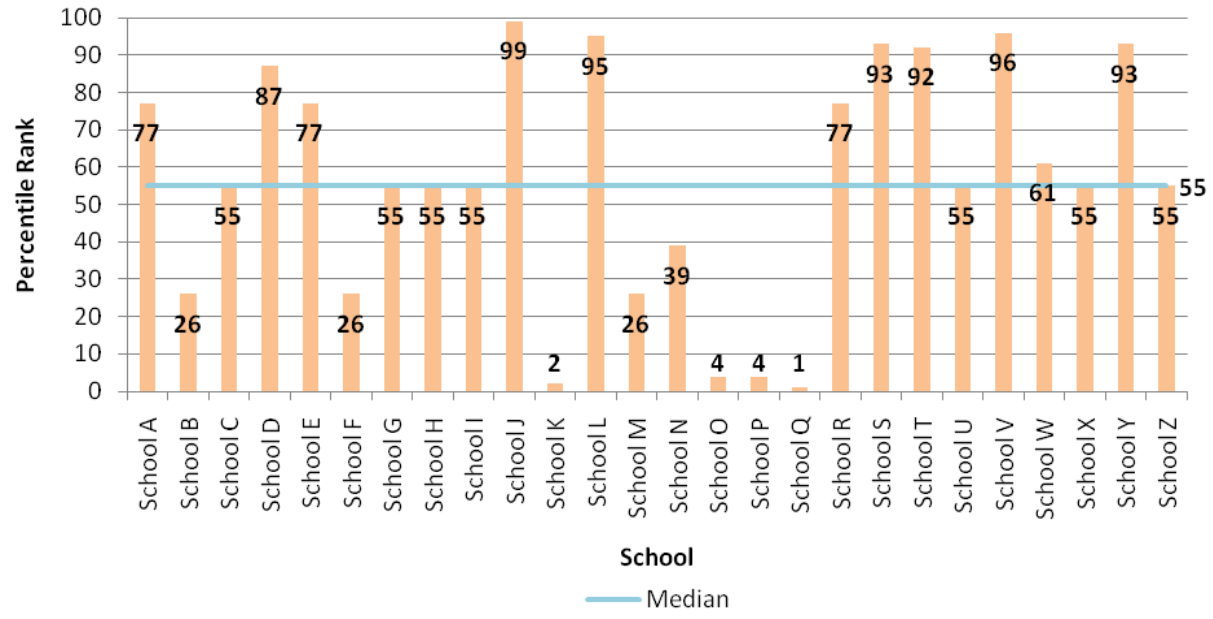
**Figure 19. Purposeful Student Assessment—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**




*Effective teaching*

The median percentile rank of CAG schools on the Effective Teaching subscale was 55. In other words, 45% of norm-referenced average schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program (Figure 20). This was the second lowest rated of the CSIQ subscales, indicating it is an area of concern for CAG schools. With respect to individual school results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 99% of norm-referenced schools. School J exhibited the highest rank, with only 1% of norm-referenced schools scoring higher.

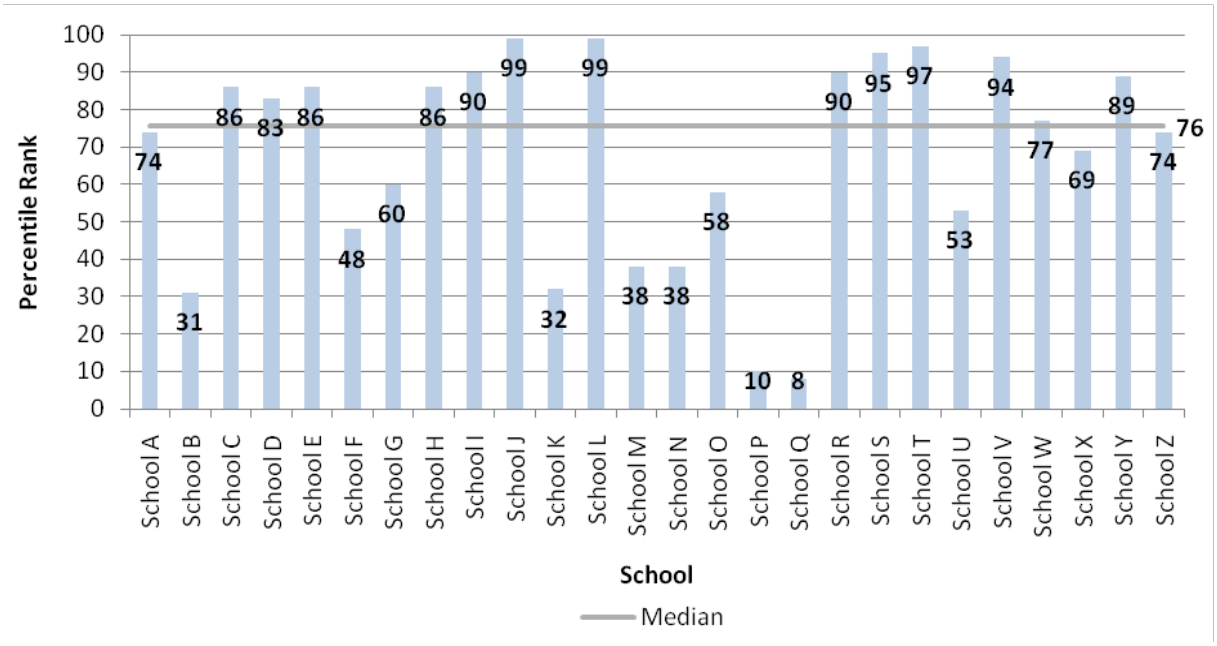
**Figure 20. Effective Teaching—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**




*Aligned and balanced curriculum*

The median percentile rank of CAG schools on the Aligned and Balanced Curriculum subscale was 76. In other words, only 24% of norm-referenced average schools exhibited scores on the subscale that were higher than the median score of the CAG schools at the end of the 5-year program (Figure 21). This was the highest rated of the CSIQ subscales, indicating it to be an area of particular strength for CAG schools. With respect to individual school results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 92% of norm-referenced schools. Schools J and L exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

**Figure 21. Aligned and Balanced Curriculum—CSIQ Percentile Ranking of Individual CAG Schools on Norm-Referenced Scale (Average Schools), and Median Score for All CAG Schools, 2010**




## Summary of the CSIQ Findings

One overarching caveat must be expressed prior to interpreting these results. These findings are descriptive in nature. While it is interesting and useful to compare the results of CAG schools with norm-referenced schools, there is not sufficient evidence to determine whether these differences between CAG schools and norm-referenced schools were meaningfully and statistically significant. Nor does this study design allow us to determine if the survey results are directly attributable to the presence of the CAG program. With these limitations in mind, the following interpretations of the CSIQ findings are offered:

- In general, elementary and middle schools served by the CAG program appear to have performed higher on the CSIQ than high schools. Elementary schools outperformed average norm-referenced schools on all seven subscales, and middle schools outperformed average schools on all but one subscale. While this finding cannot be attributed directly to the CAG program, this is an indicator of success for these schools.
- High schools served by the CAG program were outperformed by average norm-referenced schools and schools identified as high performing learning communities (HPLCs) on all seven subscales. This indicates that the CAG high schools continue to exhibit a strong need for intervention.
- In no case did CAG schools outperform norm-referenced schools that were identified as HPLCs. This is not particularly surprising given the fact that all CAG schools were identified as requiring substantial intervention prior to being included in the CAG

program. However, CAG schools should strive to reach the benchmarks set by HPLCs, and in some cases the CAG schools' scores did approach those of HPLCs.

- The CSIQ identified at least two critical areas of need for CAG schools as a group. These include building school-family-community connections and increasing school-wide capacity for effective teaching. These were both areas where the median for CAG schools fell below the 50th percentile. These areas are absolutely critical to school improvement, and as such, it is recommended that WVDE continue to focus professional development and other resources on addressing these deficiencies in CAG schools.
- The CSIQ identified at least three areas of strength for CAG schools as a group. These include the presence of an aligned and balanced curriculum, a positive learning culture, and high quality and purposeful student assessment. These are areas where the median for CAG schools fell above the 70th percentile for norm-referenced average schools. As such, these areas appear to be well-covered in most CAG schools. However, there were some specific CAG schools where the percentile ranks for these subscales were particularly low. Given their results on the remaining subscales, it is likely that these schools still require substantial intervention.

### Research Question 5

*What are the areas of strength and concern in CAG schools in terms of school culture and capacity for improvement?*

To study this question, two additional surveys were administered in all 26 CAG schools in the spring of 2010. To address the school culture aspect of the question, the Perceptions of School Culture questionnaire ([POSC] Cowley, et al., 2006) was administered; likewise, to investigate schools' capacity to improve, the Measure of School Capacity for Improvement ([MSCI] Hughes, et al., 2006) was administered. Results and discussion of the POSC survey are presented first, followed by results of the MSCI.

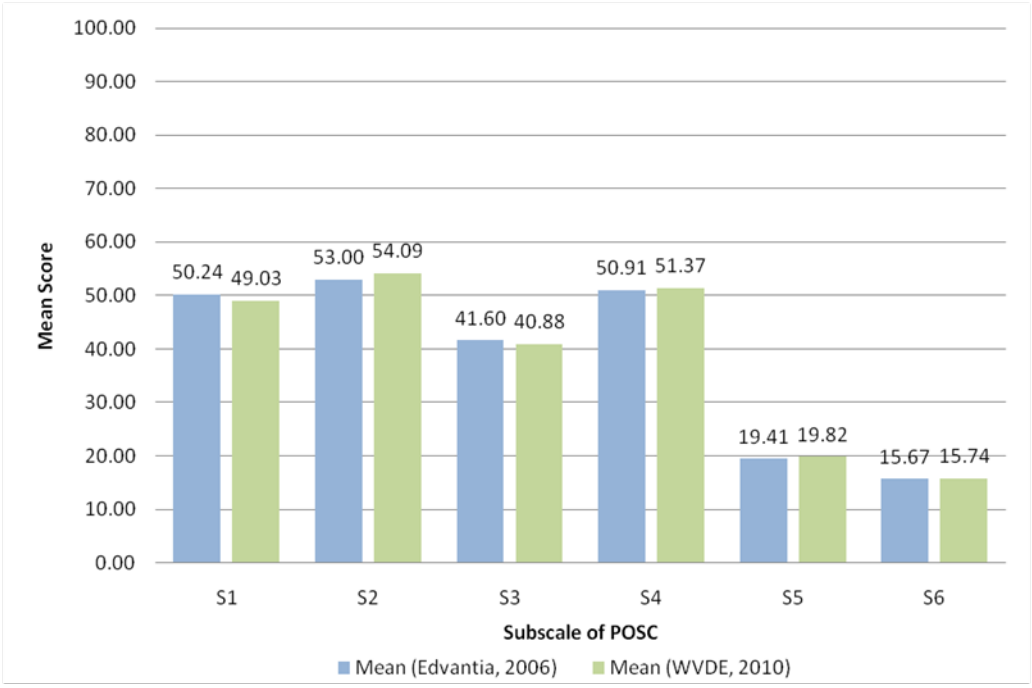
### Perceptions of School Culture survey results

The following section presents the results of the 2010 administration of the POSC survey in CAG schools. As described earlier, the POSC is a tool to measure perceptions of faculty and staff about six key components of school culture: (a) Collaborative Working Relationships, (b) Student-Centered Vision, Mission, and Policies, (c) Student Responsibility for Learning, (d) Teacher Responsibility for Learning, (e) Inviting Physical Environment, and (f) Students and Parents as Decision Makers. The POSC survey was completed by 799 faculty and staff members in all 26 CAG schools. WVDE researchers also compared the average POSC subscale scores for the 26 CAG schools to the mean subscale scores for all CAG schools as reported in a 2006 Edvantia research report (Gilchrist, et al., 2006). It should be noted that these comparisons were made solely for descriptive purposes. Additionally, it must be noted that fewer CAG schools completed the POSC instrument in 2010 than in 2005 (i.e., 26 schools in 2010 cf. 30 schools in 2005). Therefore, no conclusions can be made as to whether the POSC results are statistically significant or directly attributable to the presence of the CAG program.

## Comparison of 2006 and 2010 mean POSC subscale scores

Figure 22 below presents the mean scores for CAG schools on each subscale of the POSC instrument. The blue bars represent the mean scores for the original 30 CAG schools as published in the 2006 Edvantia report (Gilchrist, et al., 2006). The green bars represents the mean scores for the 26 current CAG schools as collected for this report in 2010.

**Figure 22. Comparison of 2005 and 2010 Mean Scores for All CAG Schools on Six POSC Subscales**




**Subscale Key**

S1 = Collaborative Working Relationships
S2 = Student-Centered Vision, Mission, and Policies
S3 = Student Responsibility for Learning
S4 = Teacher Responsibility for Learning
S5 = Inviting Physical Environment
S6 = Students and Parents as Decision Makers

It is evident from Figure 22 that, with the exception of two subscales (Collaborative Working Relationships and Student Responsibility for Learning), the POSC scores were higher for CAG schools in 2010 than in 2006. Table 28 displays means, standard deviations, and the effect size of the change (Cohen's *d*) from the 2006 administration of the POSC to the 2010 administration. A Cohen's *d* of .20 is considered a small effect, so with values ranging from -.11 to.12, the school culture effects shown here appear to be quite small.

**Table 28. POSC 2005 and 2010 Means and Standard Deviations, and Effect Size of Change (2005-2010) by Subscale**

| Subscale | Mean 2006 (N=28) | Standard deviation 2006 | Mean 2010 (N=26) | Standard deviation 2010 | Effect Size of change (Cohen's *d*) |
|---|---|---|---|---|---|
| S1–Collaborative Working Relationships | 50.24 | 10.39 | 49.03 | 10.58 | -.11 |
| S2–Student-Centered Vision, Mission and Policies | 53.00 | 8.96 | 54.09 | 8.73 | .12 |
| S3–Student Responsibility for Learning | 41.60 | 9.33 | 40.88 | 9.61 | -.07 |
| S4–Teacher Responsibility for Learning | 50.91 | 8.75 | 51.37 | 8.71 | .05 |
| S5–Inviting Physical Environment | 19.41 | 4.56 | 19.82 | 4.03 | .09 |
| S6 –Students and Parents as Decision Makers | 15.67 | 3.86 | 15.74 | 3.83 | .02 |

## Norm-referenced POSC results for CAG schools

Figures 17–22 illustrate the percentile rankings for each of the 26 CAG schools. These percentile rankings are derived by comparing the mean subscale score for each CAG school with data from a larger group of norm-referenced schools in the *POSC User Manual and Technical Report* (Cowley, et al., 2006). For this analysis, WVDE researchers compared each CAG school to schools of the same programmatic level (e.g., elementary, middle, high, etc.). Each bar represents the percentile rank for an individual CAG school. The line that crosses the bars on each chart represents the median percentile rank for all CAG schools. The median percentile serves as a summary measure of the rank of the CAG schools when they are aggregated into a single group. Interpretation is relatively straightforward. For example, if the median for CAG schools falls below the 50$^{th}$ percentile, this would mean that the CAG schools exhibited a POSC subscale score that was lower than 50% of the norm-referenced schools for which data were compiled in developing the POSC.

*Student-centered vision, mission, and policies*

The median percentile rank of CAG schools on this subscale was 82 (Figure 24). In other words, only 18% of norm-referenced schools exhibited average scores on this subscale that were higher than the median score of the CAG schools. This was the highest rated of all the POSC subscales, indicating it to be an area of particular strength for CAG schools. With respect to individual school results, School K exhibited the lowest percentile rank on the subscale, scoring lower than 94% of norm-referenced schools. Schools J, L and O exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

*Collaborative working relationships*

The median percentile rank of CAG schools on this subscale was 64.5 (Figure 23). In other words, only 35.5% of norm-referenced schools exhibited average scores on the subscale that were higher than the average score of the CAG schools, indicating it to be an area of somewhat less concern than others for CAG schools. With respect to individual school results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 94% of norm-

referenced schools. School O exhibited the highest rank, with only 1% of norm-referenced schools scoring higher.

**Figure 24. Student-Centered Vision, Mission, and Policies—Percentile Ranking of Individual CAG Schools on POSC Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**

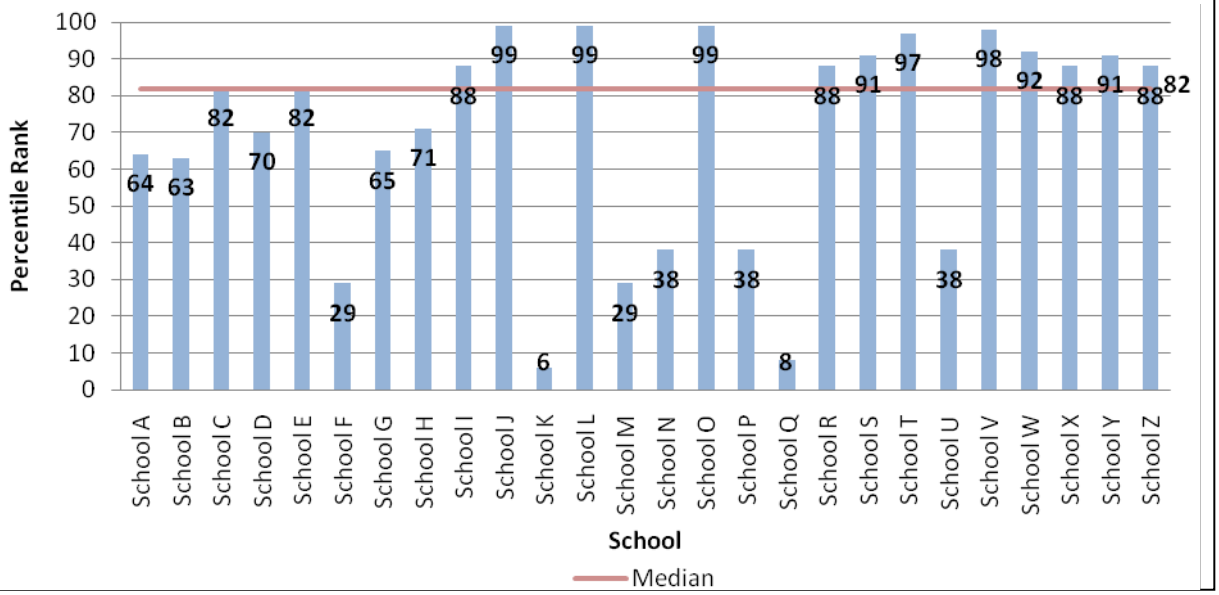
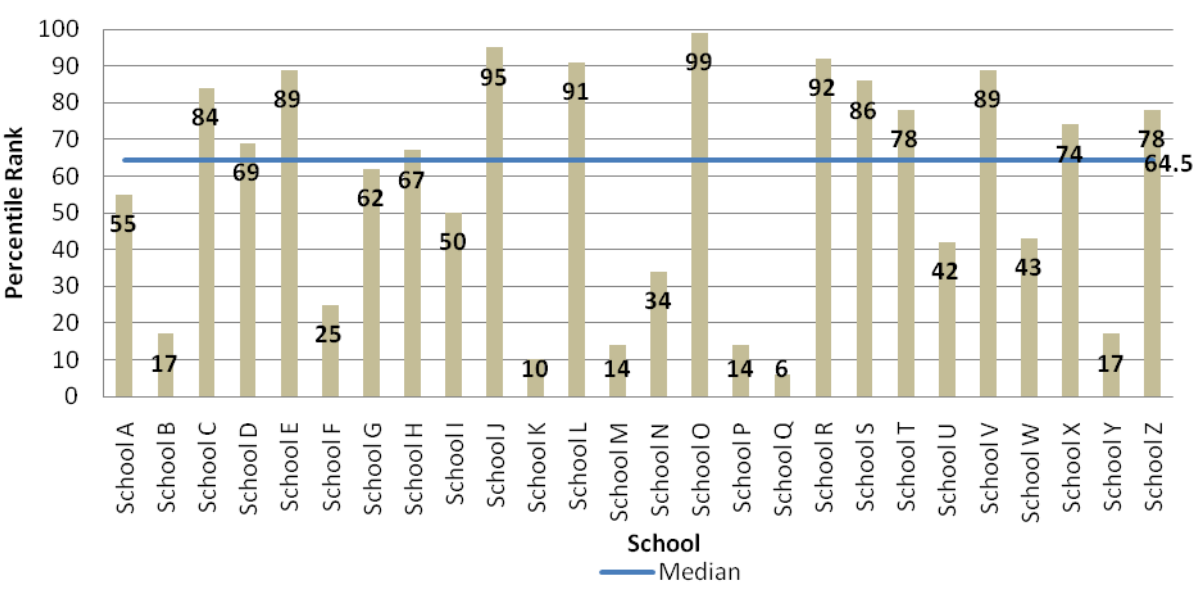


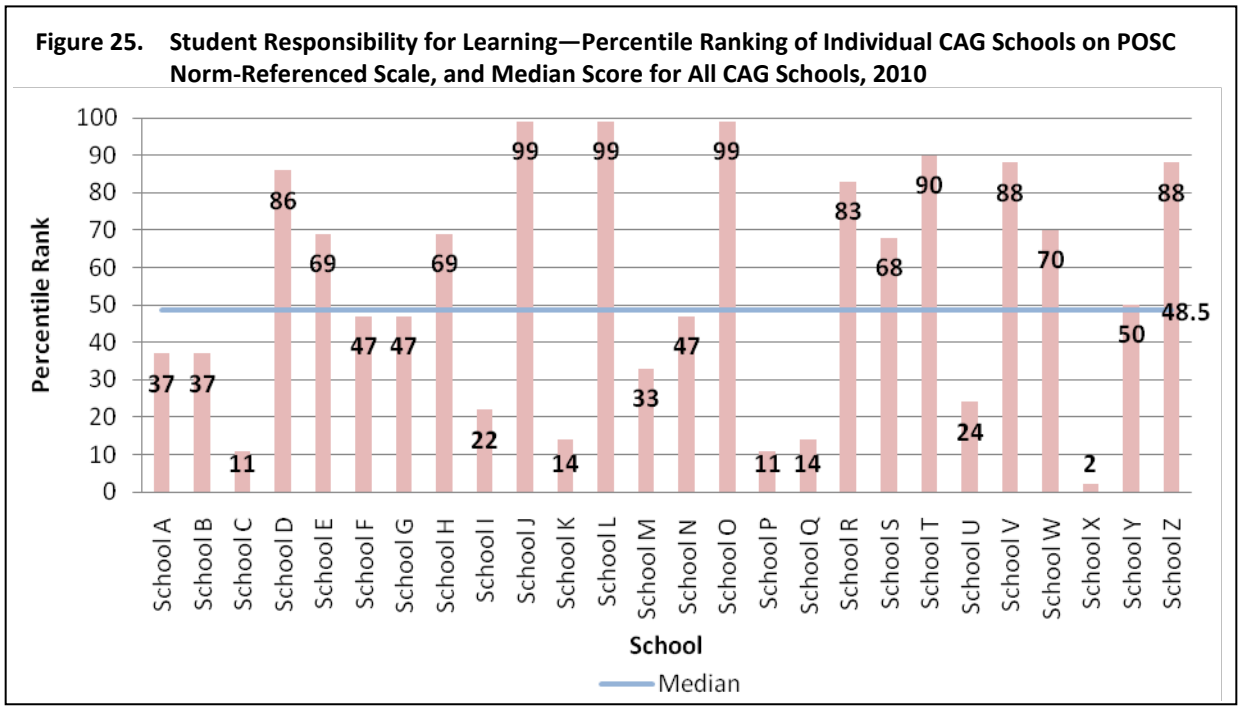

**Figure 23. Collaborative Working Relationships—Percentile Ranking of Individual CAG Schools on POSC Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**



*Student responsibility for learning*

The median percentile rank of CAG schools on this subscale was 48.5 (Figure 25). In other words, approximately 51.5% of norm-referenced schools exhibited scores on this subscale that were higher than the scores of the CAG schools. This was the lowest rated of the six POSC subscales, indicating it to be an area of particular concern for CAG schools. With respect to specific school results, School X exhibited the lowest percentile rank on the subscale, scoring lower than 98% of norm-referenced schools. Schools J, L and O again exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

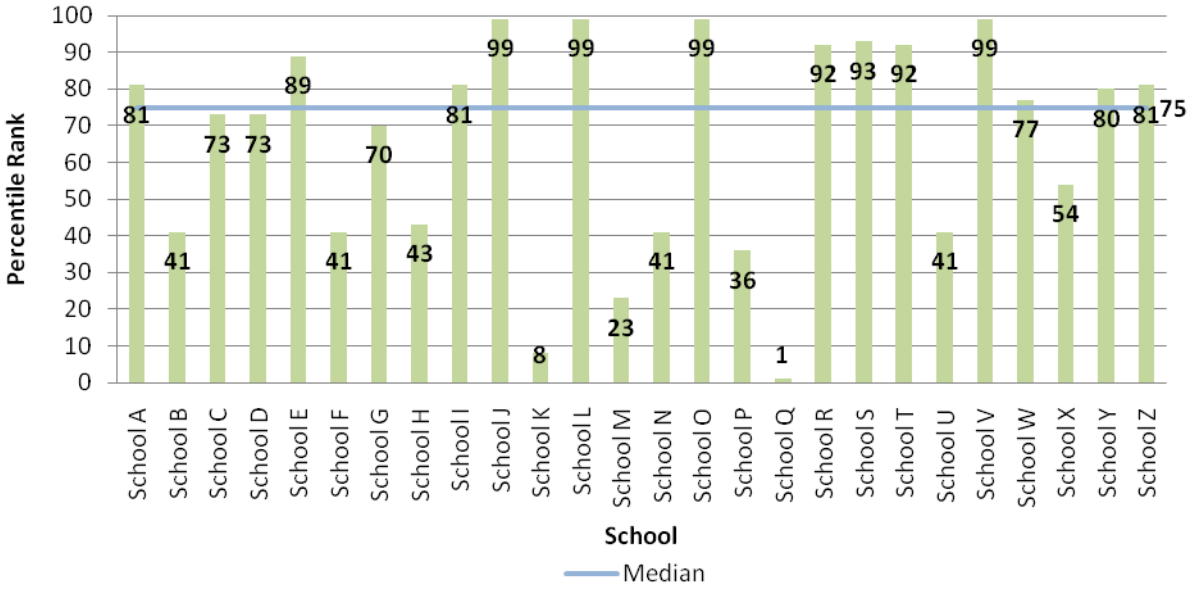
**Figure 25. Student Responsibility for Learning—Percentile Ranking of Individual CAG Schools on POSC Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




*Teacher responsibility for learning*

The median percentile rank of CAG schools on this subscale was 75 (Figure 26). In other words, as an aggregated group, only 25% of norm-referenced schools exhibited scores on this subscale that were higher than the scores of the CAG schools. This was the second-highest rated of the six POSC subscales, indicating it to be an area of strength for CAG schools. With respect to individual school data, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 99% of norm-referenced schools. Schools J, L, O, and U exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

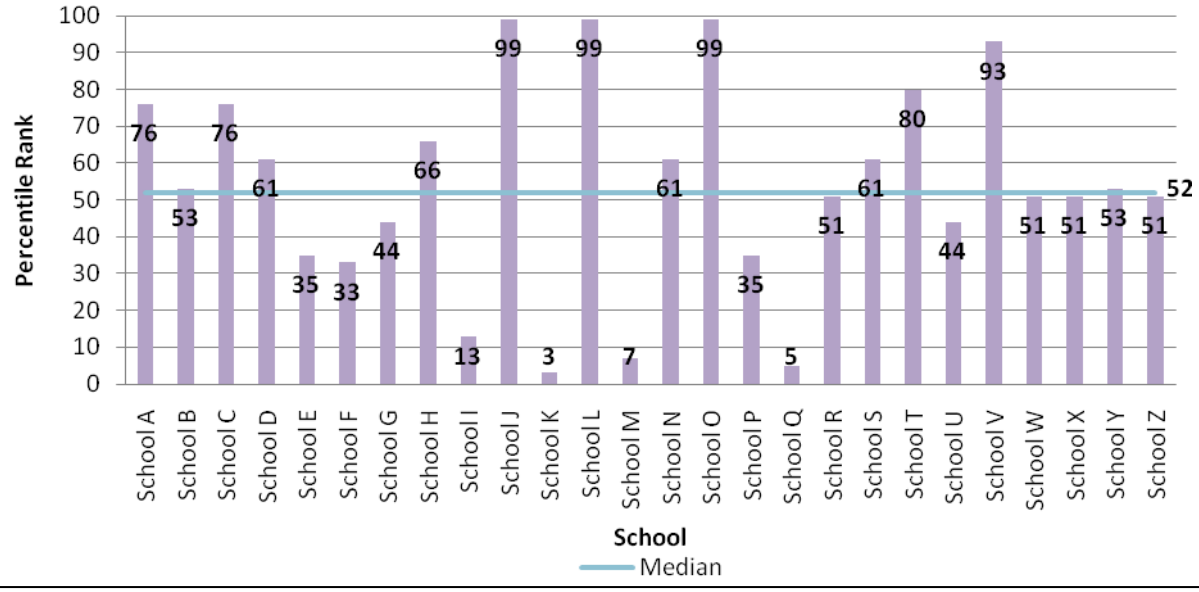
**Figure 26. Teacher Responsibility for Learning—Percentile Ranking of Individual CAG Schools on POSC Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




*Inviting physical environment*

The median percentile rank of CAG schools on this subscale was 52 (Figure 27). In other words, approximately 48% of norm-referenced schools exhibited scores on this subscale that were higher than the scores of the CAG schools. This was the second lowest rated of the six POSC subscales, indicating it to be an area of concern for CAG schools. With respect to specific schools, School K exhibited the lowest percentile rank on the subscale, scoring lower than 97%

**Figure 27. Inviting Physical Environment—Percentile Ranking of Individual CAG Schools on POSC Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**

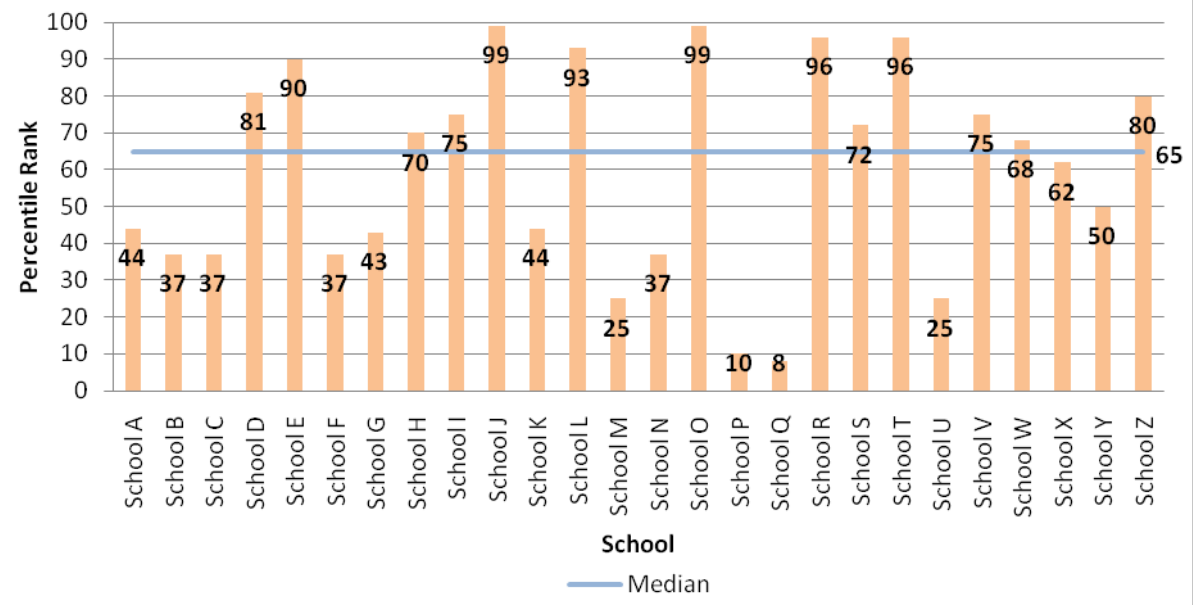


of norm-referenced schools. Schools J, L, and O exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

*Students and parents as decision makers*

The median percentile rank of CAG schools on this subscale was 65 (Figure 28). In other words, only 35% of norm-referenced schools exhibited scores on this subscale that were higher than the scores of the CAG schools, indicating it to be an area of somewhat less concern than others for CAG schools. With respect to individual schools, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 92% of norm-referenced schools. Schools J and O exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

**Figure 28. Students and Parents as Decision Makers—Percentile Ranking of Individual CAG Schools on POSC Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




## Summary of the POSC survey findings

One important caveat must be expressed prior to interpreting these results. These findings are descriptive in nature. While it is interesting and useful to compare the results of CAG schools with norm-referenced schools, there is not sufficient evidence to determine whether these differences between CAG schools and norm-referenced schools were meaningfully or statistically significant. Nor is the study design sufficient to determine if the survey results are directly attributable to the presence of the CAG program. With these limitations in mind, the following interpretations of the POSC findings are offered:

- The POSC identified at least two potential areas of need for the aggregated group of CAG schools. These include building a sense of student responsibility for learning and ensuring the presences of an inviting physical environment. The median percentile for CAG schools fell near or below the 50th percentile for both areas. Increasing students' sense of responsibility for their own learning, while a very difficult task, would likely

contribute heavily toward improving achievement in these schools. Likewise the presence of a positive and safe learning environment is critically important in increasing students' ability to learn. If the CAG program continues, these two areas would be ideal places to focus resources in CAG schools.

- The POSC identified at least two areas of strength for CAG schools. These include the presence of a strong Student-Centered Vision, Mission, and Policies and high levels of Teacher Responsibility for Learning. For both areas the median fell above the 70$^{th}$ percentile in CAG schools. A strong student-centered vision is the central support structure for a successful school. Likewise when teachers possess a sense of responsibility for their students' learning, they are more driven to be successful with those students. Both areas are essential for school improvement and the CAG program should capitalize on these assets.
- CAG schools exhibited a small increase on five of the seven POSC subscales during the course of the CAG program. The data provided in the original 2006 Edvantia report (Gilchrist, et al., 2006) were not sufficient to allow WVDE to make any conclusions about the statistical significance of these changes. However, the effect size statistics calculated for each change indicated that the changes were negligible, at best. Additionally, the retrospective nature of this study does not allow WVDE to isolate the CAG program as the agent driving this change. However, these data do illustrate, on a descriptive level that at least some positive cultural change has taken place in CAG schools over the course of the project.

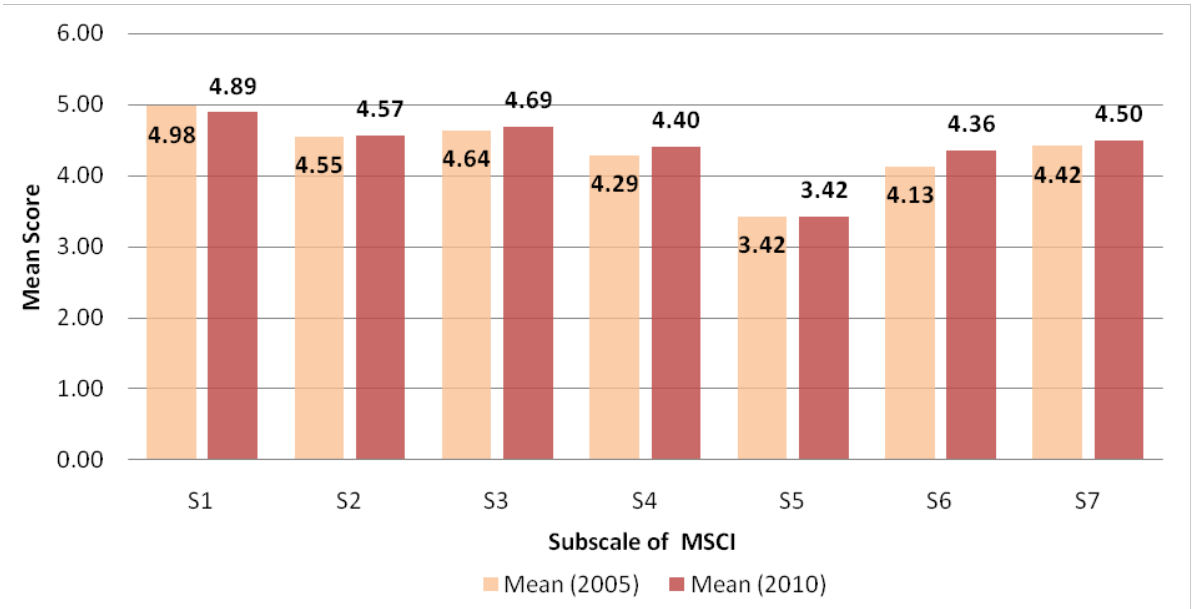
### Measure of School Capacity for Improvement results

The following section presents the results of the 2010 administration of the MSCI survey (Hughes, et al., 2006), beginning with a comparison between these results and results obtained in a 2006 administration of the survey CAG schools. As mentioned earlier, the MSCI contains 58 Likert-type response format items which comprise seven distinct subscales: (a) Equity in Practice, (b) Expectations for Student Performance, (c) Differentiated Instruction, (d) Improvement Program Coherence, (e) Peer Reviewed Practice, (f) Coordinated Curriculum, and (g) Technical Resources. The MSCI was completed by 784 faculty and staff members ($N$ =784) in 26 CAG schools of various programmatic levels.

### Comparison of 2006 and 2010 mean MSCI subscale scores

Figure 29 below presents the mean scores for CAG schools on each subscale of the MSCI instrument. The orange bars represent the mean scores for the original 30 CAG schools as published in the 2006 Edvantia report: *Baseline Study of Selected Professional Development Schools in West Virginia* (Gilchrist, et al., 2006). The red bar represents the mean score for the 26 current CAG schools as collected for the purposes of this report in 2010.

**Figure 29. Comparison of 2005 and 2010 Mean Scores for All CAG Schools on Seven MSCI Subscales**




**Subscale Key**

S1 = Equity in Practice
S2 = Expectations for Student Performance
S3 = Differentiated Instruction
S4 = Improvement Program Coherence
S5 = Peer Reviewed Practice
S6 = Coordinated Curriculum
S7 = Technical Resources

It is evident from the figure that, for five of the seven MSCI subscales, mean scores were slightly higher for CAG schools in 2010 than in 2006. Scores were lower in 2010 for the Equity in Practices subscale (S1) and stayed the same for the Peer Reviewed Practice subscale (S5). It should be noted that these findings are descriptive in nature; the data collected are not sufficient for WVDE researchers to make any claims of statistical significance or direct attribution to the CAG program. Additionally, it should be noted that fewer CAG schools completed the MSCI instrument in 2010 than in 2005 (i.e., 26 schools in 2010 cf. 30 schools in 2006). Table 29 displays means, standard deviations, and the effect size of the change (Cohen's *d*) from the 2005 administration of the POSC to the 2010 administration. A Cohen's *d* of .20 is considered a small effect, so with values ranging from -.012 to .21, the school climate effects shown here are quite small.

**Table 29. MSCI 2005 and 2010 Means and Standard Deviations, and Effect Size of Change (2005-2010) by Subscale**

| MSCI Subscale | Mean (N= 29) 2006 | SD 2006 | Mean (N=26) 2010 | SD 2010 | Effect size of change (Cohen's *d*) |
|---|---|---|---|---|---|
| S1–Equity in Practice | 4.98 | .67 | 4.89 | .84 | -.012 |
| S2–Expectations for Student Performance | 4.55 | .85 | 4.57 | .87 | .02 |
| S3–Differentiated Instruction | 4.64 | .85 | 4.69 | .84 | .06 |
| S4–Improvement Program Coherence | 4.29 | .83 | 4.40 | .83 | .13 |
| S5–Peer Reviewed Practice | 3.42 | 1.38 | 3.42 | 1.40 | .0 |
| S6–Coordinated Curriculum | 4.13 | 1.13 | 4.36 | 1.03 | .21 |
| S7–Technical Resources | 4.42 | .10 | 4.50 | .96 | .12 |

## Norm-referenced MSCI results for CAG schools

Figure 31 through Figure 36 illustrate the percentile rankings for each of the 26 CAG schools. These percentile ranks are derived by comparing the mean subscale score for each CAG school with data from a larger group of norm-referenced schools in the *MSCI User Manual and Technical Report* (Hughes, et al., 2006). For this analysis, WVDE researchers compared each CAG school to schools of the same programmatic level (e.g., elementary, middle, high, etc.). Each bar represents the percentile rank for an individual CAG school. The line that crosses the bars on each chart represents the median percentile rank for all CAG schools. The median percentile serves as a summary measure of the rank of the CAG schools when they are aggregated into a single group. Interpretation is relatively straightforward. For example, if the median for CAG schools falls below the 50th percentile, this would mean that the CAG schools exhibited a MSCI subscale score that was lower than 50% of the norm-referenced schools.

*Expectations for student performance*

The median percentile rank of CAG schools on this subscale was 50 (Figure 31). In other words, 50% of norm-referenced schools exhibited scores on the subscale that were higher than the scores of the CAG schools. This was one of the lowest rated of the MSCI subscales, indicating it as an area of concern for CAG schools. With respect to individual results, Schools O and Q exhibited the lowest percentile ranks on the subscale, scoring lower than 97% of norm-referenced schools. School J exhibited the highest rank, with only 10% of norm-referenced schools scoring higher.

*Equity in practice*

The median percentile rank of CAG schools on this subscale was 55 (Figure 30). In other words, 45% of norm-referenced schools exhibited scores on the subscale that were higher than the scores of the CAG schools. This was the second-lowest rated of the MSCI subscales, indicating it as a potential area of concern for CAG schools. With respect to individual results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 97% of norm-

referenced schools. Schools J and V exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

**Figure 31. Expectations for Student Performance—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**

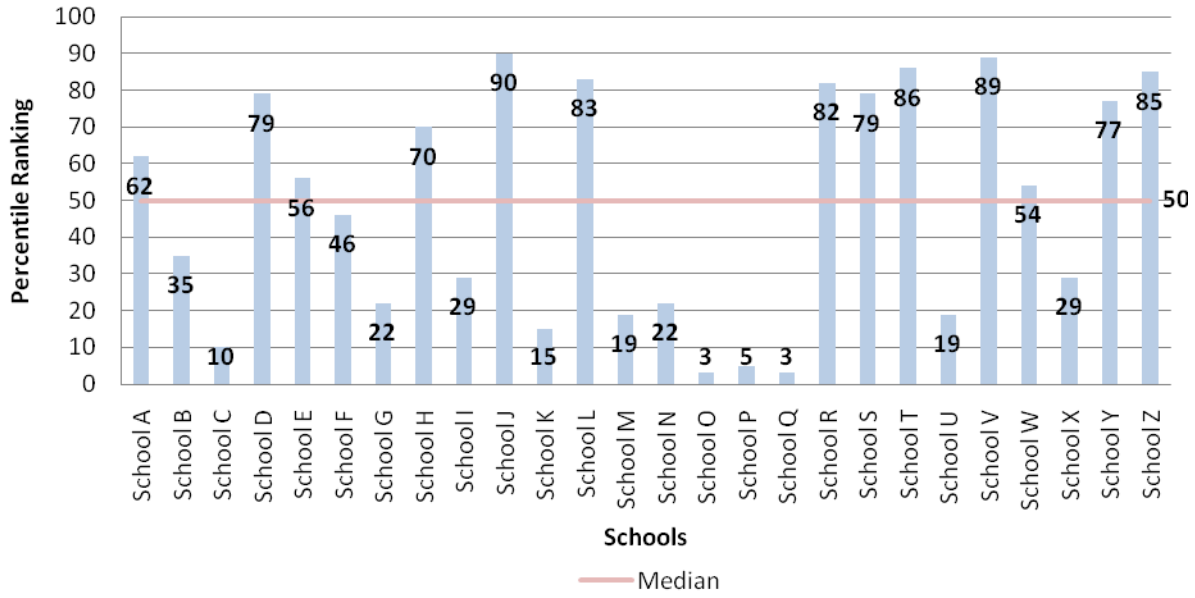
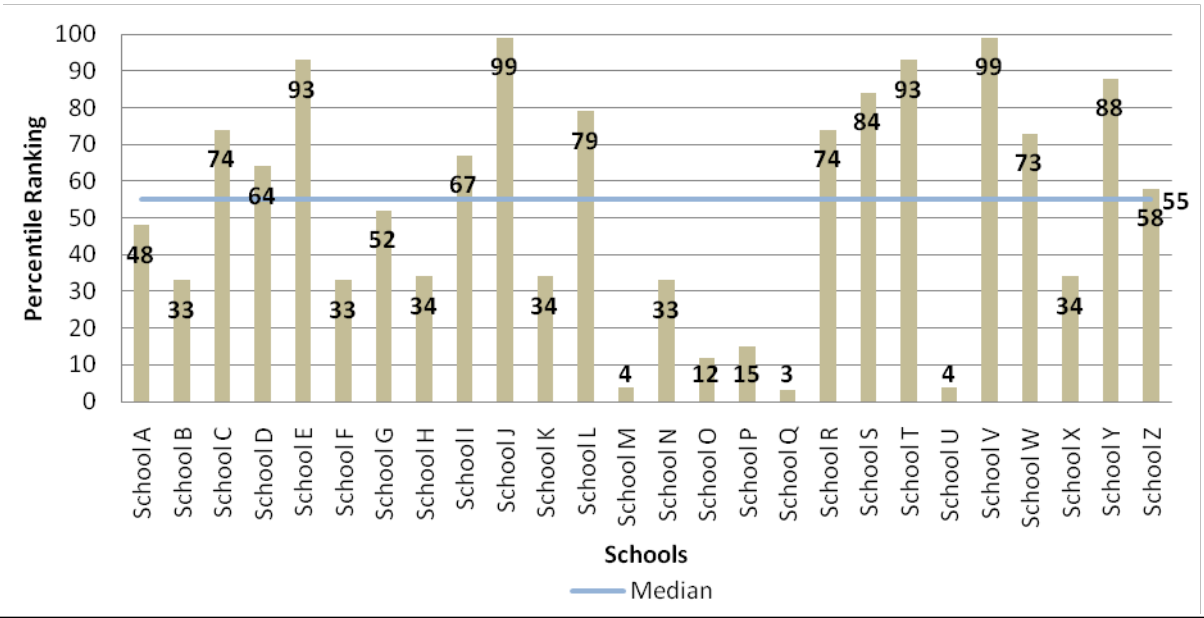


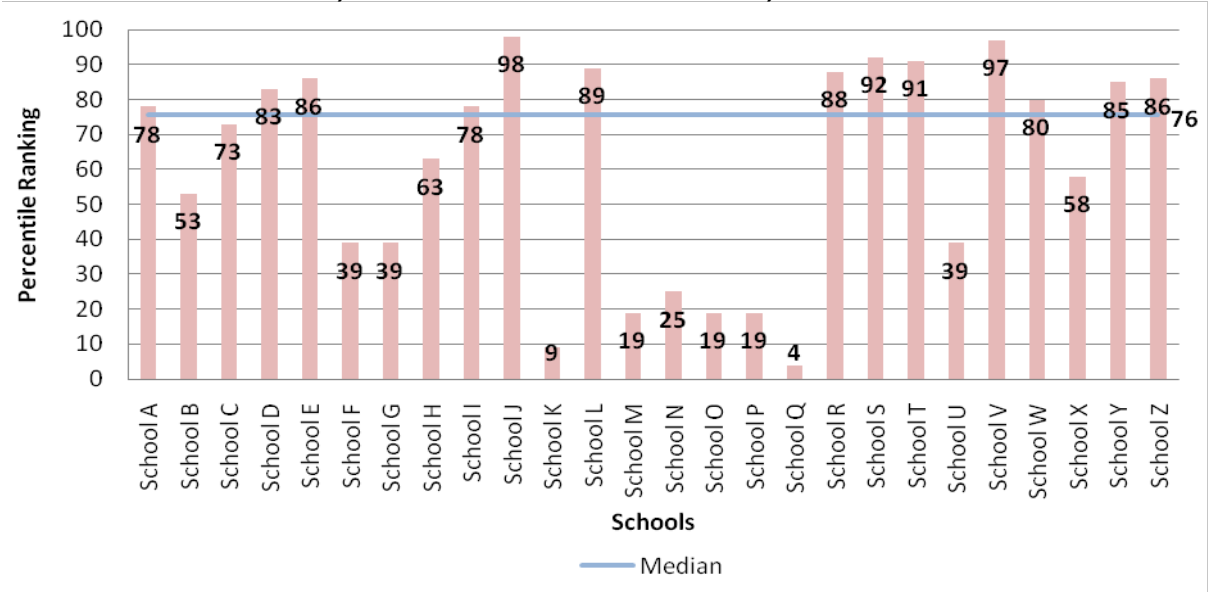

**Figure 30. Equity in Practice—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**



*Differentiated instruction*

The median percentile rank of CAG schools on this subscale was 76 (Figure 32). In other words, only 24% of norm-referenced schools exhibited scores on this subscale that were higher than the scores of the CAG schools. This was the highest rated of the MSCI subscales, indicating it as an area of particular strength for CAG schools. With respect to individual results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 96% of norm-referenced schools. School J exhibited the highest rank, with only 2% of norm-referenced schools scoring higher.

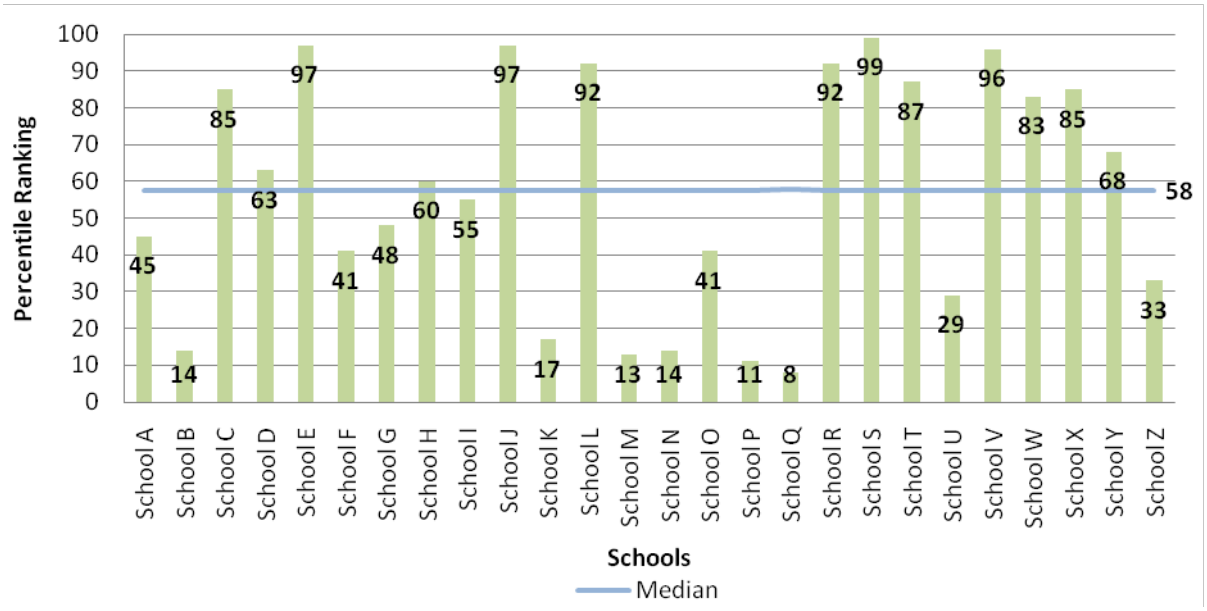
**Figure 32. Differentiated Instruction—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




*Improvement program coherence*

The median percentile rank of CAG schools on this subscale was 58 (Figure 33). In other words, 42% of norm-referenced schools exhibited average scores on the subscale that were higher than the average scores of the CAG schools. This was the third-lowest rated of the MSCI subscales, indicating it as a potential area of concern for CAG schools. With respect to individual results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 92% of norm-referenced schools. School S exhibited the highest rank, with only 1% of norm-referenced schools scoring higher.

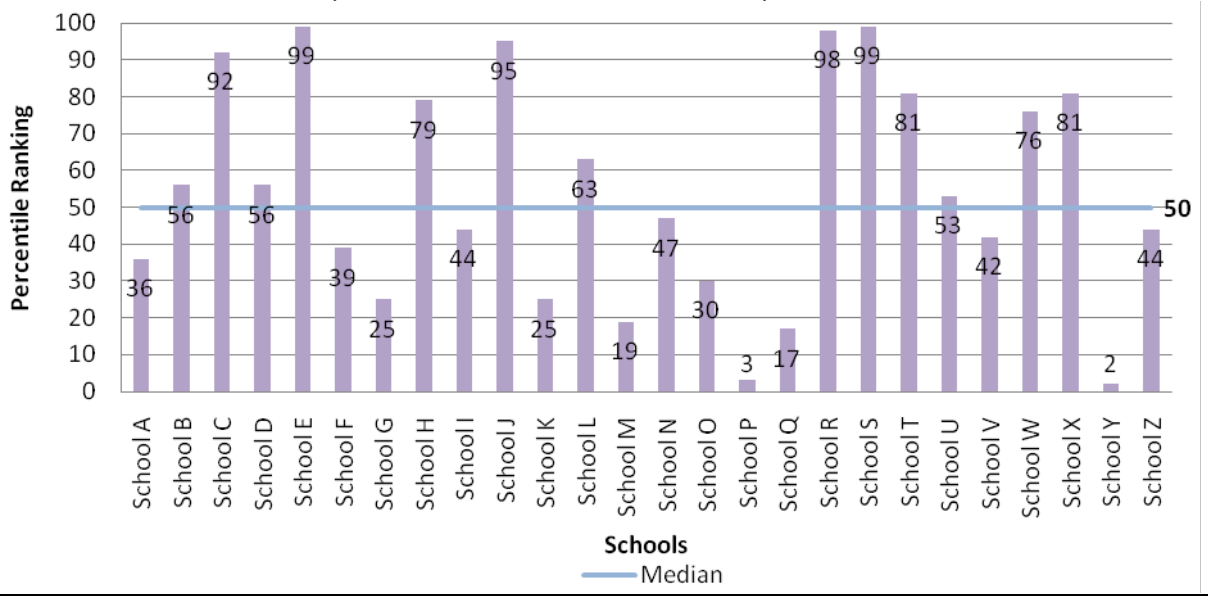
**Figure 33. Improvement Program Coherence—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




*Peer reviewed practice*

The median percentile rank of CAG schools on this subscale was 50 (Figure 34). In other words, 50% of norm-referenced schools exhibited scores on the subscale that were higher than the scores of the CAG schools. This was among the lowest rated of the MSCI subscales, indicating it as an area of concern for CAG schools. With respect to individual results, School Y exhibited the lowest percentile rank on the subscale, scoring lower than 98% of norm-referenced

**Figure 34. Peer Reviewed Practice—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**

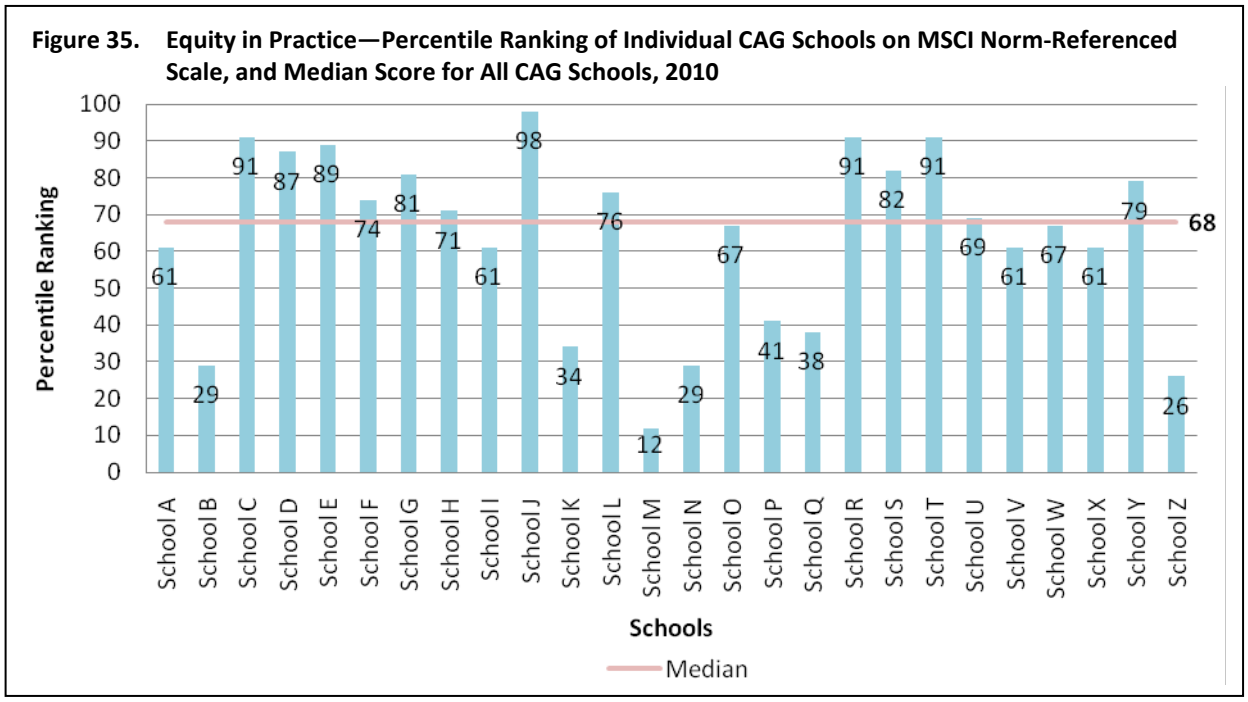


schools. Schools E and S exhibited the highest ranks, with only 1% of norm-referenced schools scoring higher.

*Equity in practice*

The median percentile rank of CAG schools on this subscale was 68 (Figure 35). In other words, 32% of norm-referenced schools exhibited scores on the subscale that were higher than the scores of the CAG schools. This was the third-highest rated of the MSCI subscales, indicating it as a potential area of strength for CAG schools. With respect to individual results, School M exhibited the lowest percentile rank on the subscale, scoring lower than 88% of norm-referenced schools. School J exhibited the highest rank, with only 2% of norm-referenced schools scoring higher.

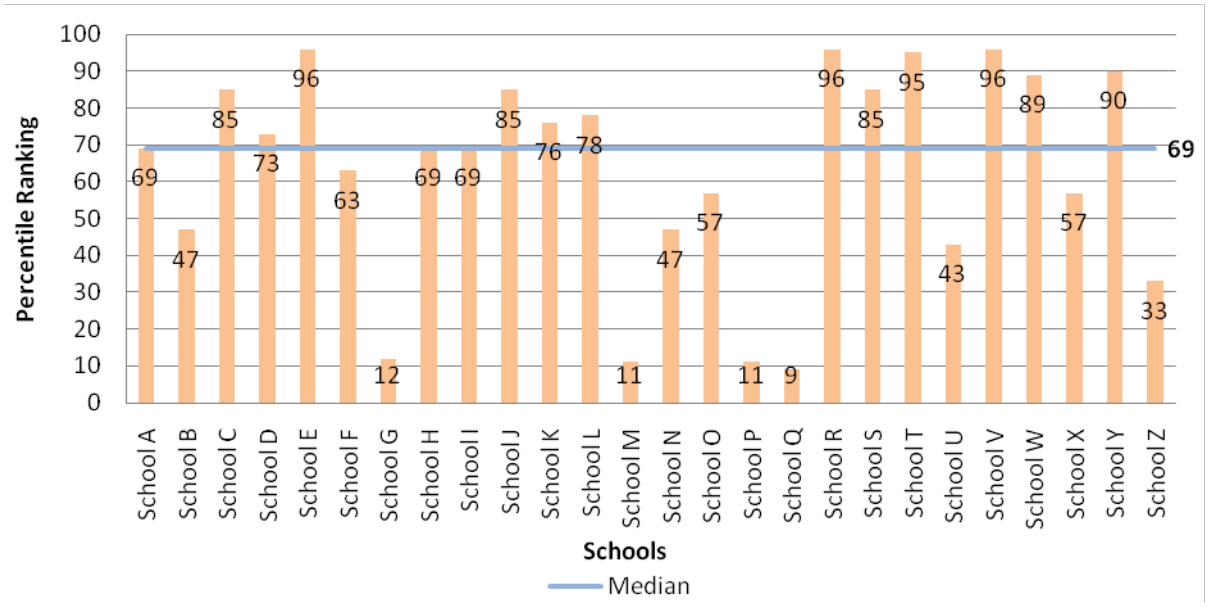
**Figure 35. Equity in Practice—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




*Technical resources*

The median percentile rank of CAG schools on this subscale was 69 (Figure 36). In other words, 31% of norm-referenced schools exhibited scores on the subscale that were higher than the scores of the CAG schools. This was the second-highest rated of the MSCI subscales, indicating it as an area of strength for CAG schools. With respect to individual results, School Q exhibited the lowest percentile rank on the subscale, scoring lower than 91% of norm-referenced schools. Schools E, R and V exhibited the highest ranks, with only 4% of norm-referenced schools scoring higher.

**Figure 36. Technical Resources—Percentile Ranking of Individual CAG Schools on MSCI Norm-Referenced Scale, and Median Score for All CAG Schools, 2010**




## Summary of the MSCI Findings

One overarching caveat must be expressed prior to interpreting these results. These findings are descriptive in nature. While it is interesting and useful to compare the results of CAG schools with norm-referenced schools, there is not sufficient evidence to determine whether these differences between CAG schools and norm-referenced schools were meaningfully and statistically significant. Nor is the study design sufficient to determine if the survey results are directly attributable to the presence of the CAG program. With these limitations in mind, the following interpretations of the POSC findings are offered:

- The MSCI identified three critical areas of need for CAG schools as a group. These include building capacity for peer reviewed practice, increasing expectations for student performance and fostering equity in practice. These were areas where the median for CAG schools fell at or very near the 50$^{th}$ percentile. It is recommended that WVDE continue to focus professional development and other resources on addressing these deficiencies in CAG schools.
- The MSCI identified at least three areas of strength for CAG schools as a group. These include the use of differentiated instruction, presence of technical resources and adoption of a coordinated curriculum. These are areas where the median for CAG schools fell near or above the 70$^{th}$ percentile. As such, these areas appear to be well-covered in most CAG schools. However, there were some specific CAG schools where the percentile ranks for these subscales were particularly low. WVDE researchers recommends continued monitoring in these schools with respect to the identified areas of weakness.

- CAG schools exhibited a small increase on five of the seven MSCI subscales during the course of the CAG program. The data provided in the original 2006 Edvantia report (Gilchrist, et al., 2006) were not sufficient to allow WVDE researchers to make any conclusions about the statistical significance of these changes. However, the effect size statistics calculated for each change indicated that the changes were negligible, at best. Additionally, the retrospective nature of this study does not allow WVDE researchers to isolate the CAG program as the agent driving this change. However, these data do illustrate, on a descriptive level that at least some positive change has taken place in CAG schools over the course of the project.

# Discussion of Results

The current examination yielded several results that have implications for the CAG program. First, *with respect to summative assessment scores, there were no significant differences between CAG and non-CAG schools across the duration of the program*. This does not mean that the CAG program was not successful. Achievement is only one indicator of program success and, as noted above, *all groups under examination in CAG schools (i.e., all groups combined and the Black, economically disadvantaged, and students with disabilities subgroups), exhibited higher mean scale scores at the conclusion of the program than at its inception in 2004. This finding held true for both reading/language arts and mathematics*. In fact, in most cases, the CAG schools exhibited a steady upward gain in average scale scores while the non-CAG comparison schools exhibited erratic or plateaued performance. Some of the year-to-year changes in CAG schools were statistically significant (See Appendix A). While the WVDE researchers cannot make the assumption that the CAG program was the sole reason for the gradual increase in average scale scores, it is certainly possible that the focused support provided by CAG liaisons was a contributing factor.

*With respect to the Black student subgroup, there was an increase in mean scale scores at CAG schools over time, which ultimately resulted in Black students at the CAG schools exceeding the performance of Black students in non-CAG control schools for both reading/ anguage arts and mathematics in 2008*. This finding has immense practical significance considering that the impetus for the CAG program rose from the need to address achievement gaps for African American students. *This finding of CAG schools outpacing comparison schools did not hold for all groups combined or for the economically disadvantaged and students with disabilities subgroups*. The students with disabilities subgroup, in particular, exhibited quite erratic performance in CAG schools when compared with a gradual upward trend in non-CAG schools. Ultimately in 2008, the students with disabilities subgroup in CAG schools performed much lower than the students with disabilities subgroup in non-CAG control schools when examining fourth-grade scale scores. It is unclear why this is the case, but it does warrant further investigation.

In conducting post hoc analyses with all 20 CAG schools for which data were available, *WVDE researchers found that as a group, the CAG schools exhibited cumulative proficiency level increases that exceeded statewide increases for all groups under examination (i.e., all groups combined and the Black, economically disadvantaged, and students with disabilities subgroups). This finding held for both reading/language arts and mathematics*. However, this finding could potentially be an artifact of the fact that CAG schools started with larger achievement gaps than the state in many cases and, therefore, had more room to improve. *Furthermore, while the CAG schools exhibited more steady improvements in proficiency rates over the period of the program than the state student enrollment as a whole, achievement gaps for the state were still narrower in 2008 than for CAG schools with respect to mathematics.* Specifically, the 2008 mathematics achievement gaps between all groups combined and economically disadvantaged students was -7.81% when examining the statewide population, compared with -9.14% in CAG schools; the mathematics achievement gap for Black students was

-10.88% statewide compared with -11.19% in CAG schools. However, the gap between all groups combined and the students with disabilities subgroup was -33.47% in mathematics statewide, and only -30.51% in CAG schools. *Taken together, these findings indicate that CAG schools were slightly more effective than the state in closing achievement gaps in mathematics for students with disabilities, but not for the economically disadvantaged or Black subgroups.*

*Interestingly, the results were reversed for reading/language arts, where CAG schools exhibited narrower achievement gaps than the state in 2008.* Specifically, the 2008 reading/language arts achievement gap between all groups combined and the students with disabilities subgroup was -38.20 statewide and -34.51% in CAG schools; the gap between all groups combined and the Black subgroup was -6.53% statewide and -5.35% in CAG schools. However, the achievement gap between all groups combined and the economically disadvantaged subgroup was -7.21% statewide and -7.24% in CAG schools in 2008. Taken together, *these results illustrate that CAG schools were more effective in closing achievement gap in reading/language arts for the Black and students-with-disabilities subgroups than the state, but neutral with respect to the economically disadvantaged subgroup.*

The questionnaires administered for this study—the Continuous School Improvement Questionnaire (CSIQ), the Perceptions of School Culture (POSC) survey, and the Measure of School Capacity for Improvement (MSCI) survey—provided some very useful data by revealing areas of strength and concern for many of the CAG schools. *Eight areas of strength emerged for CAG schools across the three questionnaires: (a) aligned and balanced curriculum; (b) positive learning culture; (c) use of purposeful student assessment; (d) student centered vision, mission, and policies; (e) teachers taking responsibility for student learning; (f) use of differentiated instruction; (g) presence of technical resources; and (h) use of a coordinated curriculum*. Notably, each of the eight areas of strength is either explicitly or implicitly aligned with the CAG program standards as described in the introduction of this report. For example, the presence of an aligned and balanced curriculum is clearly aligned with Standard 3—Developing Accountability, while a positive learning culture aligns with Standard 5—Creating Community. While the data gathered for this study are not sufficient to say that the CAG program caused these to become areas of strength in CAG schools, it is nonetheless an interesting finding how closely they align with the standards of the CAG program. Furthermore, these areas of strength are useful to WVDE in that they offer several potential leverage points that could be built upon to encourage additional successes in CAG schools.

*The three surveys also identified seven areas of concern for many of the CAG schools, and this information is equally useful to faculty in the CAG schools and to WVDE. These areas included (a) student responsibility for learning; (b) inviting physical environment; (c) building school, family and community connections; (d) school-wide capacity for effective teaching; (e) peer reviewed practice; (f) expectations for student performance; and (g) equity in practice.* The CAG program standards address some of these areas quite explicitly, but others are addressed only implicitly or not at all. First, it could be said that the chief purpose of the CAG program is to promote equity in achievement and in practice among CAG schools. Furthermore, building schoolwide capacity for effective teaching is implicitly aligned with Standard 4—Building Capacity and Standard 6—Growing Professionally. Additionally, focusing school efforts on peer-reviewed practice is quite explicitly aligned with Standards 1, 2, 3 and 4, which focus on the

establishment of leadership teams, professional learning communities, and facilitating self-reflection among school faculty and staff. However, certain areas of weakness identified by this research such as building school, family, and community connections are only partially addressed by the CAG standards. That is, there is a clear focus on building an internal school community and on connecting schools with local colleges and universities via Standard 5—Creating Community. However, the CAG standards do not explicitly address building connections between schools and families or other key community partners. This is a critical part of the school improvement process and in creating sustainable change. Likewise, there is not an explicit focus within the CAG standards on building students' sense of responsibility of their own learning or in rejuvenating the physical environment—two elements that are necessary antecedents to increased student achievement. It is important to note that no single program can adequately address all potential areas of need in schools. However, it would be prudent to align future intervention in the CAG schools with the needs identified in this research study.

*When examining the results of the CSIQ, some interesting differences emerged among programmatic levels***.** Specifically, CAG elementary schools, middle schools, and "other" configuration schools almost universally exhibited mean subscale scores that were equal to or exceeded the mean subscale scores for average schools from the norm-referenced sample. *This essentially means that CAG elementary and middle schools were generally comparable to or higher performing than average elementary schools in terms of capacity for improvement. However, CAG high schools performed below the mean for average norm-referenced high schools on all seven subscales.* This could be an artifact of the inherent differences between the programmatic levels or perhaps the relatively small number of CAG high schools could have biased the results. Regardless, this sharp contrast indicates that there are likely several unmeasured differences between elementary, middle, and high schools and, as a result, the limited summative assessment analyses conducted in this study do not tell the entire story of achievement in CAG schools.

Focus group interviews revealed information about the context surrounding the CAG program and the specific work of the CAG liaisons. Specifically, *the liaisons reported that the majority of their technical assistance focused on addressing Standards 1, 4, and 6*. Standard 1—Bringing Focus, deals with assisting schools with strategic planning, developing leadership teams, and using data as the basis for school and classroom decision making. Standard 4—Building Capacity, addresses working with faculty and staff to implement standards-based curriculum and instruction, developing professional development that is supportive of 21st century teaching and learning, facilitating self-reflection, and providing support for schools' efforts to close achievement gaps. Finally, Standard 6, Growing Professionally, focuses closely on providing support for continuous improvement through high quality and ongoing professional development. *Within these standards, five strands or foci of services emerged. These included, (a) increased student learning and achievement, (b) providing guidance and support to schools as opposed to explicit direction, (c) increasing open communication with school staff, (d) facilitating and following up with professional development and (e) focusing on using data to drive instruction and assessment.*

The information from focus group interviews revealed the challenges and barriers associated with the CAG program including lack of preparation time during the day, requiring them to prepare for their work with teachers, principals, and county administrators in the evenings and on weekends. Other responses to the question about challenges and barriers included (a) getting in the door, (b) money, (c) lack of leadership or resistance to leadership, (d) support, (e) retirements, and (f) maintaining a positive culture.

## Limitations

This study was retrospective in nature. The limited availability of some data imposed constraints on the analyses WVDE researchers were able to conduct. Staff did not employ a methodology adequate to make causal inferences about the impact of the CAG program. This report is intended to stand among other evidence collected by the WVDE Office of Title II, III, and System Support during the course of the CAG program, and should be viewed as a single component rather than as the entire portfolio of evidence.

# Recommendations

The WVDE Office of Research makes the following broad recommendations given the findings presented in this report:

WVDE researchers recommend continued monitoring of the achievement gaps in CAG schools and statewide. The Office of Research is poised to accomplish this work via the annual updating of the Closing the Achievement Gap report.

Despite a lack of statistical significance for the fourth-grade assessment data examined, the CAG program was associated with a variety of successful program outcomes including marginally higher post-test perceptions of school culture, capacity for improvement, and continuous school improvement on most item subscales. Additionally, for the majority of cases, the CAG schools made steady progress in narrowing achievement gaps for all subgroups in both reading/language arts and mathematics. While the research study conducted is not sufficient to determine whether the CAG program caused these changes, it is likely that the support provided by the CAG program was helpful for CAG schools. It is also evident that there is still room for improvement in these schools. The Office of Research recommends continued support in order to capitalize on this success. The CAG liaisons have already built substantial rapport with these schools and would be very valuable in these future efforts.

If the CAG program continues, ongoing evaluation should be conducted from the outset in order to more rigorously determine the program's success in achieving its formative and summative goals. Because the data for this study were compiled retrospectively, it is impossible for WVDE researchers to determine a causal link between the CAG program and the outcomes reported herein. While another evaluation would likely be subject to similar deficiencies due to the lack of a true experiment, it would certainly allow for a more credible study of program impact. Additionally, ongoing evaluation is critical to guiding programmatic adjustments to the services delivered via the program.

The current study revealed a great deal of valuable information about the areas of strength and areas of concern in individual CAG schools. This information could be potentially useful in guiding future intervention efforts in the CAG schools. The Office of Research has provided these results to the program director and recommends that they be shared with the individual schools involved in the CAG program and perhaps with other offices within the WVDE that are working with these schools to impact school improvement. Specifically, the areas of strength identified by this study could be used as leverage points within these schools and areas of concern could be used to provide a focus for additional support services.

The information from focus group interviews revealed the challenges and barriers associated with the CAG program. WVDE should learn from these challenges and design intervention programs that are better suited to avoid these potential pitfalls.

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# Appendix A. Null Hypothesis Significance Testing and Results of *T* Tests Between Program Years

# Null Hypothesis Significance Testing

**CAG Experimental Schools (n=12) versus Control Schools (n=12)**

**Ho: μ1 = μ2 Accepted otherwise Rejected**

**Mathematics and Reading/Language Arts**

Ho1: There is no statistical significant difference in **Mathematics** Scale Scores in 2004 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho2: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2004 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho3: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2004 for **students with socially economically disadvantage (Low SES)** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho4: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2004 for **students with disabilities (SWD)** between experimental schools (n=12) and control schools (n=12) where p<.05 Ho5: There is no statistical significant difference in **Mathematics** Scale Scores in 2005 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho6: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2005 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho7: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2005 for **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho8: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2005 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho9: There is no statistical significant difference in **Mathematics** Scale Scores in 2006 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho10: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2006 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho11: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2006 for **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho12: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2006 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho13: There is no statistical significant difference in **Mathematics** Scale Scores in 2007 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho14: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2007 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho15: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2007 for **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho16: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2007 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho17: There is no statistical significant difference in **Mathematics** Scale Scores in 2008 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho18: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2008 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho19: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2008 for **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho20: There is no statistical significant difference in **Mathematics** Mean Scale Scores in 2008 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho21: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2004 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho22: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2004 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho23: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2004 for or **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho24: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2004 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho25: There is no statistical significant difference in **Reading/Language Arts** Scale Scores in 2005 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho26: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2005 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho27: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2005 for or **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho28: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2005 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho29: There is no statistical significant difference in **Reading/Language Arts** Scale Scores in 2006 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho30: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2006 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho31: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2006 for or **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho32: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2006 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho33: There is no statistical significant difference in **Reading/Language Arts** Scale Scores in 2007 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho34: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2007 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho35: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2007 for **students with Low** SES between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho36: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2007 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho37: There is no statistical significant difference in **Reading/Language Arts** Scale Scores in 2008 for **All students** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho38: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2008 for **black students** between experimental schools (n=10) and control schools (n=10) where p<.05.

Ho39: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2008 for or **students with Low SES** between experimental schools (n=12) and control schools (n=12) where p<.05.

Ho40: There is no statistical significant difference in **Reading/Language Arts** Mean Scale Scores in 2008 for **SWD** between experimental schools (n=12) and control schools (n=12) where p<.05.

# Results of *T* Tests between Program Years

**Table A 1. Mathematics All in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 636.73 | -4.75 | 12.60 | -.943 | .356 |
| Control | 12 | 641.48 | | 12.10 | | |

P<.05 Ho1: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 2. Mathematics Black in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 627.94 | -3.82 | 12.27 | -.637 | .532 |
| Control | 10 | 631.76 | | 14.42 | | |

p<.05 Ho2: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 3. Mathematics Low SES in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 636.40 | -4.91 | 13.37 | -.914 | .370 |
| Control | 12 | 641.32 | | 12.96 | | |

P<.05 Ho3: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 4. Mathematics SWD in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 613.26 | 2.73 | 11.61 | .239 | .815 |
| Control | 12 | 610.53 | | 37.82 | | |

P<.05 Ho4: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 5. Mathematics All in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 642.09 | -6.85 | 9.94 | -1.507 | .147 |
| Control | 12 | 648.94 | | 12.21 | | |

P<.05 Ho5: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 6. Mathematics Black in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 634.63 | -5.69 | 7.37 | -.953 | .359 |
| Control | 10 | 640.32 | | 17.35 | | |

P<.05 Ho6: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 7. Mathematics Low SES in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 638.17 | -7.33 | 8.96 | -1.903 | .070 |
| Control | 12 | 645.50 | | 9.90 | | |

P<.05 Ho7: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 8. Mathematics SWD in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 622.29 | -3.40 | 13.55 | -.512 | .614 |
| Control | 12 | 625.69 | | 18.63 | | |

P<.05 Ho8: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 9. Mathematics All in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 643.53 | -3.96 | 11.50 | -.842 | .409 |
| Control | 12 | 647.49 | | 11.56 | | |

P<.05 Ho9: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 10. Mathematics Black in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 634.25 | -6.93 | 10.31 | -1.323 | .203 |
| Control | 10 | 641.19 | | 12.97 | | |

P<.05 Ho10: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 11. Mathematics Low SES in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 639.34 | -3.28 | 10.34 | .770 | .449 |
| Control | 12 | 642.62 | | 10.53 | | |

P<.05 Ho11: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 12. Mathematics SWD in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 627.62 | -1.29 | 14.64 | -.200 | .843 |
| Control | 12 | 628.91 | | 16.86 | | |

P<.05 Ho12: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 13. Mathematics All in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 648.92 | -.45 | 7.78 | -.085 | .933 |
| Control | 12 | 649.37 | | 16.53 | | |

P<.05 Ho13: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 14. Mathematics Black in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 643.78 | .572 | 9.63 | .572 | .577 |
| Control | 10 | 639.85 | | 19.47 | | |

P<.05 Ho14: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 15. Mathematics Low SES in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 643.86 | -2.29 | 7.63 | -.453 | .657 |
| Control | 12 | 646.15 | | 15.67 | | |

P<.05 Ho15: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 16. Mathematics SWD in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 632.70 | 1.95 | 25.63 | .183 | .856 |
| Control | 12 | 630.75 | | 26.60 | | |

P<.05 Ho16: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 17. Mathematics All in Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 650.20 | -.32 | 6.63 | -.082 | .935 |
| Control | 12 | 650.52 | | 11.82 | | |

P<.05 Ho17: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 18. Mathematics Black in Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 649.40 | 4.83 | 8.25 | .799 | .439 |
| Control | 10 | 644.57 | | 17.26 | | |

P<.05 Ho18: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 19. Mathematics Low in SES Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 639.73 | -3.65 | 6.32 | -1.387 | .179 |
| Control | 12 | 643.38 | | 6.57 | | |

P<.05 Ho19: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 20. Mathematics SWD in Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 633.13 | -3.14 | 17.61 | -.437 | .666 |
| Control | 12 | 636.27 | | 17.59 | | |

P<.05 Ho20: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 21. Reading/Language Arts All in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 634.65 | -6.29 | 16.48 | -1.038 | .310 |
| Control | 12 | 640.94 | | 13.00 | | |

P<.05 Ho21: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 22. Reading/Language Arts Black in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 629.88 | -2.19 | 5.52 | -.577 | .571 |
| Control | 10 | 632.07 | | 10.66 | | |

P<.05 Ho22: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 23.Reading/Language Arts Low SES in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 634.33 | -7.07 | 17.57 | -1.108 | .281 |
| Control | 12 | 641.41 | | 13.43 | | |

P<.05 Ho23: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 24. Reading/Language Arts SWD in Schools 2004**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 606.97 | -.65 | 13.62 | -.073 | .943 |
| Control | 12 | 607.62 | | 28.12 | | |

P<.05 Ho24: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 25. Reading/Language Arts All in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 638.13 | -4.79 | 8.85 | -1.115 | .278 |
| Control | 12 | 642.92 | | 12.00 | | |

P<.05 Ho25: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 26. Reading/Language Arts Black in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 630.92 | 1.01 | 8.34 | .172 | .866 |
| Control | 10 | 629.91 | | 16.44 | | |

P<.05 Ho26: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 27. Reading/Language Arts Low SES in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 632.76 | -5.77 | 6.71 | -1.819 | .083 |
| Control | 12 | 638.53 | | 8.71 | | |

P<.05 Ho27: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 28. Reading/Language Arts SWD in Schools 2005**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 601.65 | -8.92 | 11.54 | -.970 | .348 |
| Control | 12 | 610.57 | | 29.70 | | |

P<.05 Ho28: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 29. Reading/Language Arts All in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 641.21 | -1.11 | 9.48 | -.250 | .805 |
| Control | 12 | 642.32 | | 12.02 | | |

P<.05 Ho29: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 30. Reading/Language Arts Black in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 635.31 | -3.27 | 6.68 | -.693 | .500 |
| Control | 10 | 638.58 | | 13.31 | | |

P<.05 Ho30: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 31. Reading/Language Arts Low SES in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 636.41 | -1.20 | 6.93 | -.305 | .764 |
| Control | 12 | 637.61 | | 11.73 | | |

P<.05 Ho31: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 32. Reading/Language Arts SWD in Schools 2006**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 616.22 | 4.82 | 17.59 | .570 | .575 |
| Control | 12 | 611.40 | | 23.41 | | |

P<.05 Ho32: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 33. Reading/Language Arts All in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 642.76 | -2.40 | 8.72 | -.537 | .598 |
| Control | 12 | 645.16 | | 12.78 | | |

P<.05 Ho33: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 34. Reading/Language Arts Black in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 636.13 | .62 | 11.66 | .095 | .926 |
| Control | 10 | 635.51 | | 17.01 | | |

P<.05 Ho34 Null Hypotheses is accepted there is no statistical significant difference.

**Table A 35. Reading/Language Arts Low SES in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 636.15 | -4.98 | 9.56 | -1.055 | .304 |
| Control | 12 | 641.13 | | 13.27 | | |

P<.05 Ho35: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 36. Reading/Language Arts SWD in Schools 2007**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 603.99 | -18.69 | 44.73 | -1.30 | .212 |
| Control | 12 | 622.68 | | 21.90 | | |

P<.05 Ho36: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 37. Reading All Schools in 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 644.68 | -3.32 | 6.96 | -1.04 | .309 |
| Control | 12 | 648.00 | | 8.56 | | |

P<.05 Ho37: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 38. Reading Black in Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 10 | 643.84 | 5.00 | 5.64 | 1.02 | .328 |
| Control | 10 | 638.84 | | 14.38 | | |

P<.05 Ho38: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 39. Reading Low SES in Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 639.73 | -3.65 | 6.32 | -1.39 | .179 |
| Control | 12 | 643.38 | | .657 | | |

P<.05 Ho39: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 40. Reading SWD in Schools 2008**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| Experimental | 12 | 617.81 | -12.02 | 22.93 | -1.34 | .193 |
| Control | 12 | 629.83 | | 20.86 | | |

P<.05 Ho40: Null Hypotheses is accepted there is no statistical significant difference.

# Null Hypothesis Significance Testing

Title I CAG Experimental Schools 5 years

2004 to 2008 for Mathematics and Reading Language Arts

Ho41: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for All students from 2004 to 2005 where p<.05.

Ho42: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for All students from 2004 to 2006 where p<.05.

Ho43: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for All students from 2004 to 2007 where p<.05.

Ho44: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for All students from 2004 to 2008 where p<.05.

Ho45: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for All students from 2005 to 2006 where p<.05.

Ho46: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for All students from 2005 to 2007 where p<.05.

Ho47: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for All students from 2005 to 2008 where p<.05.

Ho48: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for All students with from 2006 to 2007 where p<.05.

Ho49: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for All students from 2006 to 2008 where p<.05.

Ho50: There is no statistical significant difference in Mathematics Scale Scores for Scale Scores in the experimental group for All students from 2007 to 2008 where p<.05.

Ho51: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for black students from 2004 to 2005 where p<.05.

Ho52: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for black students from 2004 to 2006 where p<.05.

Ho53: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for black students from 2004 to 2007 where p<.05.

Ho54: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for black students from 2004 to 2008 where p<.05.

Ho55: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for black students from 2005 to 2006 where p<.05.

Ho56: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for black students from 2005 to 2007 where p<.05.

Ho57: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for black students from 2005 to 2008 where p<.05.

Ho58: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for black students with from 2006 to 2007 where p<.05.

Ho59: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for black students from 2006 to 2008 where p<.05.

Ho60: There is no statistical significant difference in Mathematics Scale Scores for Scale Scores in the experimental group for black students from 2007 to 2008 where p<.05.

Ho61: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for students with Low SES from 2004 to 2005 where p<.05.

Ho62: There is no statistical significant difference in Mathematics Scale for Scores in the experimental group for students with Low SES from 2004 to 2006 where p<.05.

Ho63: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for students with Low SES from 2004 to 2007 where p<.05.

Ho64: There is no statistical significant difference in Mathematics Scale Scores Arts Scale Scores in the experimental group for students with Low SES from 2004 to 2008 where p<.05.

Ho65: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group students with Low SES from 2005 to 2006 where p<.05.

Ho66: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group students with Low SES from 2005 to 2007 where p<.05.

Ho67: There is no statistical significant difference in Mathematics Scale Scores in the experimental group students with Low SES from 2005 to 2008 where p<.05.

Ho68: There is no statistical significant difference in Mathematics Scale Scores in the experimental group students with Low SES from 2006 to 2007 where p<.05.

Ho69: There is no statistical significant difference in Mathematics Scale Scores in the experimental group with students with Low SES from 2006 to 2008 where p<.05.

Ho70: There is no statistical significant difference in Mathematics Scale Scores in the experimental group with students with Low SES from 2007 to 2008 where p<.05.

Ho71: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for SWD from 2004 to 2005 where p<.05.

Ho72: There is no statistical significant difference in Mathematics Scale for Scores in the experimental group for SWD from 2004 to 2006 where p<.05.

Ho73: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for SWD from 2004 to 2007 where p<.05.

Ho74: There is no statistical significant difference in Mathematics Scale Scores Arts Scale Scores in the experimental group for SWD from 2004 to 2008 where p<.05.

Ho75: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for SWD from 2005 to 2006 where p<.05.

Ho76: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the experimental group for SWD from 2005 to 2007 where p<.05.

Ho77: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for SWD from 2005 to 2008 where p<.05.

Ho78: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for SWD from 2006 to 2007 where p<.05.

Ho79: There is no statistical significant difference in Mathematics Scale Scores in the experimental group for SWD from 2006 to 2008 where p<.05.

Ho80: There is no statistical significant difference in Mathematics Scale Scores for Scale Scores in the experimental group for SWD from 2007 to 2008 where p<.05.

Ho81: There is no statistical significant difference in Reading/Language Arts Scores in the experimental group for All students from 2004 to 2005 where p<.05.

Ho82: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for All students from 2004 to 2006 where p<.05.

Ho83: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for All students from 2004 to 2007 where p<.05.

Ho84: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for All students from 2004 to 2008 where p<.05.

Ho85: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for All students from 2005 to 2006 where p<.05.

Ho86: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for All students from 2005 to 2007 where p<.05.

Ho87: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for All students from 2005 to 2008 where p<.05.

Ho88: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for All students with from 2006 to 2007 where p<.05.

Ho89: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for All students from 2006 to 2008 where p<.05.

Ho90: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the experimental group for All students from 2007 to 2008 where p<.05.

Ho91: There is no statistical significant difference in Reading/Language Arts Scores in the experimental group for black students from 2004 to 2005 where p<.05.

Ho92: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for black students from 2004 to 2006 where p<.05.

Ho93: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for black students from 2004 to 2007 where p<.05.

Ho94: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for black students from 2004 to 2008 where p<.05.

Ho95: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for black students from 2005 to 2006 where p<.05.

Ho96: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for black students from 2005 to 2007 where p<.05.

Ho97: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for black students from 2005 to 2008 where p<.05.

Ho98: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for black students with from 2006 to 2007 where p<.05.

Ho89: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for black students from 2006 to 2008 where p<.05.

Ho100: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the experimental group for black students from 2007 to 2008 where p<.05.

Ho101: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for students with Low SES from 2004 to 2005 where p<.05.

Ho102: There is no statistical significant difference in Reading/Language Arts Scale for Scores in the experimental group for students with Low SES from 2004 to 2006 where p<.05.

Ho103: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for students with Low SES from 2004 to 2007 where p<.05.

Ho104: There is no statistical significant difference in Reading/Language Arts Scale Scores Arts Scale Scores in the experimental group for students with Low SES from 2004 to 2008 where p<.05.

Ho105: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group for students with Low SES from 2005 to 2006 where p<.05.

Ho106: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group students with Low SES from 2005 to 2007 where p<.05.

Ho107: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for students with Low SES from 2005 to 2008 where p<.05.

Ho108: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for students with Low SES from 2006 to 2007 where p<.05.

Ho109: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for students with Low SES from 2006 to 2008 where p<.05.

Ho110: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the experimental group for students with Low SES from 2007 to 2008 where p<.05.

Ho111: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for SWD from 2004 to 2005 where p<.05.

Ho112: There is no statistical significant difference in Reading/Language Arts Scale for Scores in the experimental group for SWD from 2004 to 2006 where p<.05.

Ho113: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group for SWD from 2004 to 2007 where p<.05.

Ho114: There is no statistical significant difference in Reading/Language Arts Scale Scores Arts Scale Scores in the experimental group for SWD from 2004 to 2008 where p<.05.

Ho115: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group SWD from 2005 to 2006 where p<.05.

Ho116: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the experimental group SWD from 2005 to 2007 where p<.05.

Ho117: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group SWD from 2005 to 2008 where p<.05.

Ho118: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group SWD from 2006 to 2007 where p<.05.

Ho119: There is no statistical significant difference in Reading/Language Arts Scale Scores in the experimental group with Disabilities from 2006 to 2008 where p<.05.

Ho120: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the experimental group SWD from 2007 to 2008 where p<.05.

# Results of T- Tests between Program Years

**Table A 41. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.73 | -5.36 | 12.60 | -3.408 | .006* |
| 2005 | 12 | 642.09 | | 9.94 | | |

P<.05 Ho41: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 42. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.73 | -6.80 | 12.60 | -2.822 | .017* |
| 2006 | 12 | 643.53 | | 11.50 | | |

P<.05 Ho42: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 43. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.73 | -12.19 | 12.60 | -4.280 | .001* |
| 2007 | 12 | 648.92 | | 7.78 | | |

P<.05 Ho43: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 44. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.73 | -13.47 | 12.60 | -4.143 | .002* |
| 2008 | 12 | 650.20 | | 6.64 | | |

P<.05 Ho44: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 45. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 642.09 | -1.44 | 9.94 | -.612 | .553 |
| 2006 | 12 | 643.53 | | 11.50 | | |

P<.05 Ho45: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 46. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 642.09 | -6.83 | 9.94 | -3.399 | .006* |
| 2007 | 12 | 648.92 | | 7.78 | | |

P<.05 Ho46: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 47. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 642.09 | -8.11 | 9.94 | -3.518 | .005* |
| 2008 | 12 | 650.20 | | 6.64 | | |

P<.05 Ho47: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 48. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 643.53 | -5.39 | 11.50 | -2.452 | .032* |
| 2007 | 12 | 648.92 | | 7.78 | | |

P<.05 Ho48 Null Hypotheses is rejected there is a statistical significant difference.

**Table A 49. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 643.53 | -6.67 | 11.50 | -2.357 | .038* |
| 2008 | 12 | 650.20 | | 6.64 | | |

P<.05 Ho49 Null Hypotheses is rejected there is a statistical significant difference.

**Table A 50. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 648.92 | -1.28 | 7.78 | -.544 | .597 |
| 2008 | 12 | 650.20 | | 6.64 | | |

P<.05 Ho50: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 51. Experimental Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 642.94 | -6.69 | 12.27 | -2.291 | .048* |
| 2005 | 10 | 634.63 | | 7.34 | | |

P<.05 Ho51 Null Hypotheses is rejected there is a statistical significant difference.

**Table A 52. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 627.94 | -6.31 | 12.27 | -2.580 | .030* |
| 2006 | 10 | 634.25 | | 10.31 | | |

P<.05 Ho52: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 53. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 627.94 | -15.84 | 12.27 | -5.051 | .001* |
| 2007 | 10 | 643.78 | | 9.63 | | |

P<.05 Ho53: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 54. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 627.94 | -21.46 | 12.27 | -5.325 | .000* |
| 2008 | 10 | 649.40 | | 8.25 | | |

P<.05 Ho54: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 55. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 634.63 | .38 | 7.38 | .164 | .873 |
| 2006 | 10 | 634.25 | | 10.31 | | |

P<.05 Ho55: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 56. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 634.63 | -9.15 | 7.78 | -6.391 | .000* |
| 2007 | 10 | 343.78 | | 9.63 | | |

P<.05 Ho56: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 57. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 634.63 | -14.77 | 7.38 | -4.515 | .001* |
| 2008 | 10 | 649.40 | | 8.25 | | |

P<.05 Ho57: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 58. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 634.25 | -9.53 | 10.31 | -3.851 | .004* |
| 2007 | 10 | 343.78 | | 9.63 | | |

P<.05 Ho58: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 59. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 634.25 | -15.15 | 10.31 | -5.034 | .001* |
| 2008 | 10 | 649.40 | | 8.25 | | |

P<.05 Ho59: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 60. Experimental Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 10 | 643.78 | -5.62 | 9.63 | -1.374 | .203 |
| 2008 | 10 | 649.40 | | 8.25 | | |

P<.05 Ho60: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 61. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.40 | -1.77 | 13.37 | -.699 | .499 |
| 2005 | 12 | 638.17 | | 8.96 | | |

P<.05 Ho61: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 62. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.40 | -2.94 | 13.37 | -.950 | .362 |
| 2006 | 12 | 639.34 | | 10.34 | | |

P<.05 Ho62: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 63. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.40 | -7.46 | 13.37 | -2.147 | .055 |
| 2007 | 12 | 643.86 | | 7.64 | | |

P<.05 Ho63: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 64. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 636.40 | -3.33 | 13.37 | -.777 | .453 |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho64: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 65. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.17 | -1.17 | 8.96 | -.518 | .615 |
| 2006 | 12 | 639.34 | | 10.34 | | |

P<.05 Ho65: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 66. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.17 | -5.69 | 8.96 | -2.952 | .013* |
| 2007 | 12 | 643.86 | | 7.64 | | |

P<.05 Ho66: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 67. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.17 | -1.56 | 8.96 | -.608 | .556 |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho67: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 68. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 639.34 | -4.52 | 10.34 | -2.186 | .051 |
| 2007 | 12 | 643.86 | | 7.64 | | |

P<.05 Ho68: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 69. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 639.34 | -.39 | 10.34 | -.115 | .911 |
| 2008 | 12 | 639.73 | | 6.35 | | |

P<.05 Ho69: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 70. Experimental Mathematics SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 643.86 | 4.13 | 7.64 | 1.428 | .181 |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho70: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 71. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 613.26 | -9.03 | 11.61 | -2.651 | .023* |
| 2005 | 12 | 622.29 | | 13.55 | | |

P<.05 Ho71: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 72. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 613.26 | -14.36 | 11.61 | -2.901 | .014* |
| 2006 | 12 | 627.62 | | 14.64 | | |

P<.05 Ho72: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 73. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 613.26 | -19.44 | 11.61 | -2.550 | .027* |
| 2007 | 12 | 632.70 | | 25.63 | | |

P<.05 Ho73: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 74. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 613.26 | -19.87 | 11.61 | -3.152 | .009* |
| 2008 | 12 | 633.13 | | 17.61 | | |

P<.05 Ho74: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 75. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 622.29 | -5.33 | 13.55 | -1.152 | .274 |
| 2006 | 12 | 627.62 | | 14.64 | | |

P<.05 Ho75: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 76. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 622.29 | -10.41 | 13.55 | -1.849 | .091 |
| 2007 | 12 | 632.70 | | 25.63 | | |

P<.05 Ho76: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 77. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 622.29 | -10.84 | 12.21 | -.714 | .490 |
| 2008 | 12 | 633.13 | | 11.82 | | |

P<.05 Ho77: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 78. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 627.62 | -5.09 | 627.62 | -.952 | .361 |
| 2007 | 12 | 632.70 | | 632.70 | | |

P<.05 Ho78: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 79. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 627.62 | -5.51 | 14.64 | -.946 | .365 |
| 2008 | 12 | 633.13 | | 17.61 | | |

P<.05 Ho79: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 80. Experimental Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 632.70 | -.43 | 25.63 | -.085 | .934 |
| 2008 | 12 | 633.13 | | 17.61 | | |

P<.05 Ho80: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 81. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.65 | -3.48 | 16.48 | -1.130 | .282 |
| 2005 | 12 | 638.13 | | 8.85 | | |

P<.05 Ho81: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 82. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | T | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.65 | -3.47 | 16.48 | -1.626 | .132 |
| 2006 | 12 | 641.21 | | 9.48 | | |

P<.05 Ho82: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 83. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.65 | -8.11 | 16.48 | -1.758 | .106 |
| 2007 | 12 | 642.76 | | 8.72 | | |

P<.05 Ho83: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 84. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.65 | -10.03 | 16.48 | -2.368 | .037* |
| 2008 | 12 | 644.68 | | 6.96 | | |

P<.05 Ho84: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 85. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.13 | -3.08 | 8.85 | -1.143 | .185 |
| 2006 | 12 | 641.21 | | 9.48 | | |

P<.05 Ho85: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 86. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.13 | -4.63 | 8.85 | -1.742 | .109 |
| 2007 | 12 | 642.76 | | 8.72 | | |

P<.05 Ho86: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 87. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.13 | -6.55 | 8.85 | -3.044 | .011* |
| 2008 | 12 | 644.68 | | 6.96 | | |

P<.05 Ho87: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 88. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 641.21 | -1.55 | 9.45 | -.583 | .572 |
| 2007 | 12 | 642.76 | | 8.72 | | |

P<.05 Ho88: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 89. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 641.21 | -3.47 | 9.48 | -1.758 | .107 |
| 2008 | 12 | 644.68 | | 6.96 | | |

P<.05 Ho89: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 90. Experimental Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 642.76 | -1.92 | 8.72 | -.651 | .528 |
| 2008 | 12 | 644.68 | | 6.96 | | |

P<.05 Ho90: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 91. Experimental Reading/Language Arts Blacks in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 629.88 | -1.04 | 5.52 | -.379 | .714 |
| 2005 | 10 | 630.92 | | 8.34 | | |

P<.05 Ho91: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 92. Experimental Reading/Language Arts Blacks in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 629.88 | -5.43 | 5.52 | -2.027 | .073 |
| 2006 | 10 | 635.31 | | 6.68 | | |

P<.05 Ho92: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 93. Experimental Reading/Language Arts Blacks in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 629.88 | -6.25 | 5.52 | -1.648 | .134 |
| 2007 | 10 | 636.13 | | 11.66 | | |

P<.05 Ho93: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 94. Experimental Reading/Language Arts Blacks in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 629.88 | -13.95 | 5.52 | -6.881 | .000* |
| 2008 | 10 | 643.84 | | 5.64 | | |

P<.05 Ho94: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 95. Experimental Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 630.92 | -4.39 | 8.34 | -1.144 | .282 |
| 2006 | 10 | 635.31 | | 6.68 | | |

P<.05 Ho95: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 96. Experimental Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 630.92 | -5.21 | 8.34 | -1.702 | .123 |
| 2007 | 10 | 636.13 | | 11.66 | | |

P<.05 Ho96: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 97. Experimental Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 630.92 | -12.92 | 8.34 | -3.839 | .004* |
| 2008 | 10 | 643.84 | | 5.64 | | |

P<.05 Ho97: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 98. Experimental Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 635.31 | -.82 | 6.68 | -.188 | .855 |
| 2007 | 10 | 636.13 | | 11.66 | | |

P<.05 Ho98: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 99. Experimental Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 635.31 | -8.52 | 6.68 | -4.047 | .003* |
| 2008 | 10 | 643.83 | | 5.64 | | |

P<.05 Ho99: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 100. Experimental Read Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 10 | 636.13 | -7.71 | 11.66 | -1.585 | .147 |
| 2008 | 10 | 643.84 | | 5.64 | | |

P<.05 Ho100: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 101. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.34 | 1.58 | 17.57 | .332 | .746 |
| 2005 | 12 | 632.76 | | 6.71 | | |

P<.05 Ho101: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 102. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.34 | -2.07 | 17.57 | -.437 | .671 |
| 2006 | 12 | 636.41 | | 6.93 | | |

P<.05 Ho102: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 103. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.34 | -1.81 | 17.57 | -.324 | .752 |
| 2007 | 12 | 636.15 | | 9.56 | | |

P<.05 Ho103: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 104. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 634.34 | -5.39 | 17.57 | -1.021 | .329 |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho104: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 105. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 632.76 | -3.65 | 6.71 | -1.740 | .110 |
| 2006 | 12 | 636.41 | | 6.93 | | |

P<.05 Ho105: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 106. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 632.76 | -3.39 | 6.71 | -1.628 | .132 |
| 2007 | 12 | 636.15 | | 9.56 | | |

P<.05 Ho106: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 107. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 632.76 | -6.97 | 6.71 | -3.063 | .011* |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho107: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 108. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 636.41 | .26 | 6.93 | .098 | .924 |
| 2007 | 12 | 636.15 | | 9.56 | | |

P<.05 Ho108: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 109. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 636.41 | -3.32 | 6.93 | -1.47 | .108 |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho109: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 110. Experimental Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 636.15 | -3.58 | 9.56 | -1.054 | .314 |
| 2008 | 12 | 639.73 | | 6.33 | | |

P<.05 Ho110: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 111. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 606.97 | 5.32 | 13.62 | 1.132 | .282 |
| 2005 | 12 | 601.65 | | 11.54 | | |

P<.05 Ho111: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 112. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 606.97 | -9.26 | 13.62 | -1.754 | .107 |
| 2006 | 12 | 616.23 | | 17.59 | | |

P<.05 Ho112: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 113. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 606.97 | 2.98 | 13.62 | .259 | .801 |
| 2007 | 12 | 603.99 | | 44.73 | | |

P<.05 Ho113: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 114. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 606.97 | -10.84 | 13.62 | -1.782 | .102 |
| 2008 | 12 | 617.81 | | 22.93 | | |

P<.05 Ho114: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 115. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 601.65 | -14.57 | 11.54 | -2.131 | .056 |
| 2006 | 12 | 616.22 | | 17.59 | | |

P<.05 Ho115: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 116. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 601.65 | -2.34 | 11.54 | -.184 | .857 |
| 2007 | 12 | 603.99 | | 44.73 | | |

P<.05 Ho116: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 117. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 601.65 | -16.16 | 11.54 | -2.088 | .061 |
| 2008 | 12 | 617.81 | | 22.93 | | |

P<.05 Ho117: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 118. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 616.22 | 12.23 | 17.59 | 1.104 | .293 |
| 2007 | 12 | 603.99 | | 44.74 | | |

P<.05 Ho118: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 119. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 616.22 | -1.59 | 17.59 | -.271 | .792 |
| 2008 | 12 | 617.81 | | 22.93 | | |

P<.05 Ho119: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 120. Experimental Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 603.99 | -13.82 | 44.74 | -1.454 | .174 |
| 2008 | 12 | 617.81 | | 22.93 | | |

P<.05 Ho120: Null Hypotheses is accepted there is no statistical significant difference.

# Null Hypothesis Significance Testing

CAG Control Group Schools

2004 to 2008 for Mathematics and Reading Language Arts

Ho131. There is no statistical significant difference in Mathematics Scale Scores in the control group for All students from 2004 to 2005 where p<.05.

Ho132: There is no statistical significant difference in Mathematics Scale Scores in the control group for All students from 2004 to 2006 where p<.05.

Ho133: There is no statistical significant difference in Mathematics Scale Scores in the control group for All students from 2004 to 2007 where p<.05.

Ho134: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for All students from 2004 to 2008 where p<.05.

Ho135: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for All students from 2005 to 2006 where p<.05.

Ho136: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for All students from 2005 to 2007 where p<.05.

Ho137: There is no statistical significant difference in Mathematics Scale Scores in the control group for All students from 2005 to 2008 where p<.05.

Ho138: There is no statistical significant difference in Mathematics Scale Scores in the control group for All students with from 2006 to 2007 where p<.05.

Ho139: There is no statistical significant difference in Mathematics Scale Scores in the control group for All students from 2006 to 2008 where p<.05.

Ho140: There is no statistical significant difference in Mathematics Scale Scores for Scale Scores in the control group for All students from 2007 to 2008 where p<.05.

Ho141: There is no statistical significant difference in Mathematics Scale Scores in the control group for black students from 2004 to 2005 where p<.05.

Ho142: There is no statistical significant difference in Mathematics Scale Scores in the control group for black students from 2004 to 2006 where p<.05.

Ho143: There is no statistical significant difference in Mathematics Scale Scores in the control group for black students from 2004 to 2007 where p<.05.

Ho144: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for black students from 2004 to 2008 where p<.05.

Ho145: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for black students from 2005 to 2006 where p<.05.

Ho146: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for black students from 2005 to 2007 where p<.05.

Ho147: There is no statistical significant difference in Mathematics Scale Scores in the control group for black students from 2005 to 2008 where p<.05.

Ho148: There is no statistical significant difference in Mathematics Scale Scores in the control group for black students with from 2006 to 2007 where p<.05.

Ho149: There is no statistical significant difference in Mathematics Scale Scores in the control group for black students from 2006 to 2008 where p<.05.

Ho150: There is no statistical significant difference in Mathematics Scale Scores for Scale Scores in the control group for black students from 2007 to 2008 where p<.05.

Ho151: There is no statistical significant difference in Mathematics Scale Scores in the control group for students with Low SES from 2004 to 2005 where p<.05.

Ho152: There is no statistical significant difference in Mathematics Scale for Scores in the control group for students with Low SES from 2004 to 2006 where p<.05.

Ho153: There is no statistical significant difference in Mathematics Scale Scores in the control group for students with Low SES from 2004 to 2007 where p<.05.

Ho154: There is no statistical significant difference in Mathematics Scale Scores Arts Scale Scores in the control group for students with Low SES from 2004 to 2008 where p<.05.

Ho155: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for students with Low SES from 2005 to 2006 where p<.05.

Ho156: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for students with Low SES from 2005 to 2007 where p<.05.

Ho157: There is no statistical significant difference in Mathematics Scale Scores in the control group for students with Low SES from 2005 to 2008 where p<.05.

Ho158: There is no statistical significant difference in Mathematics Scale Scores in the control group for students with Low SES from 2006 to 2007 where p<.05.

Ho159: There is no statistical significant difference in Mathematics Scale Scores in the control group for students with Low SES from 2006 to 2008 where p<.05.

Ho160: There is no statistical significant difference in Mathematics Scale Scores in the control group for students with Low SES from 2007 to 2008 where p<.05.

Ho161: There is no statistical significant difference in Mathematics Scale Scores in the control group for SWD from 2004 to 2005 where p<.05.

Ho162: There is no statistical significant difference in Mathematics Scale for Scores in the control group for SWD from 2004 to 2006 where p<.05.

Ho163: There is no statistical significant difference in Mathematics Scale Scores in the control group for SWD from 2004 to 2007 where p<.05.

Ho164: There is no statistical significant difference in Mathematics Scale Scores Arts Scale Scores in the control group for SWD from 2004 to 2008 where p<.05.

Ho165: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for SWD from 2005 to 2006 where p<.05.

Ho166: There is no statistical significant difference in Mathematics Scale Scores Scale Scores in the control group for SWD from 2005 to 2007 where p<.05.

Ho167: There is no statistical significant difference in Mathematics Scale Scores in the control group for SWD from 2005 to 2008 where p<.05.

Ho168: There is no statistical significant difference in Mathematics Scale Scores in the control group for SWD from 2006 to 2007 where p<.05.

Ho169: There is no statistical significant difference in Mathematics Scale Scores in the control group for SWD from 2006 to 2008 where p<.05.

Ho170: There is no statistical significant difference in Mathematics Scale Scores for Scale Scores in the control group for SWD from 2007 to 2008 where p<.05.

Ho171: There is no statistical significant difference in Reading/Language Arts Scores in the control group for All students from 2004 to 2005 where p<.05.

Ho172: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for All students from 2004 to 2006 where p<.05.

Ho173: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for All students from 2004 to 2007 where p<.05.

Ho174: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for All students from 2004 to 2008 where p<.05.

Ho175: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for All students from 2005 to 2006 where p<.05.

Ho176: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for All students from 2005 to 2007 where p<.05.

Ho177: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for All students from 2005 to 2008 where p<.05.

Ho178: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for All students with from 2006 to 2007 where p<.05.

Ho179: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for All students from 2006 to 2008 where p<.05.

Ho180: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the control group for All students from 2007 to 2008 where p<.05.

Ho181: There is no statistical significant difference in Reading/Language Arts Scores in the control group for black students from 2004 to 2005 where p<.05.

Ho182: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for black students from 2004 to 2006 where p<.05.

Ho183: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for black students from 2004 to 2007 where p<.05.

Ho184: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for black students from 2004 to 2008 where p<.05.

Ho185: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for black students from 2005 to 2006 where p<.05.

Ho186: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for black students from 2005 to 2007 where p<.05.

Ho187: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for black students from 2005 to 2008 where p<.05.

Ho188: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for black students with from 2006 to 2007 where p<.05.

Ho189: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for black students from 2006 to 2008 where p<.05.

Ho190: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the control group for black students from 2007 to 2008 where p<.05.

Ho191: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for students with Low SES from 2004 to 2005 where p<.05.

Ho192: There is no statistical significant difference in Reading/Language Arts Scale for Scores in the control group for students with Low SES from 2004 to 2006 where p<.05.

Ho193: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for students with Low SES from 2004 to 2007 where p<.05.

Ho194: There is no statistical significant difference in Reading/Language Arts Scale Scores Arts Scale Scores in the control group for students with Low SES from 2004 to 2008 where p<.05.

Ho195: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for students with Low SES from 2005 to 2006 where p<.05.

Ho196: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for students with Low SES from 2005 to 2007 where p<.05.

Ho197: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for students with Low SES from 2005 to 2008 where p<.05.

Ho198: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for students with Low SES from 2006 to 2007 where p<.05.

Ho199: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for students with Low SES from 2006 to 2008 where p<.05.

Ho190: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the control group for students with Low SES from 2007 to 2008 where p<.05.

Ho191: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for SWD from 2004 to 2005 where p<.05.

Ho192: There is no statistical significant difference in Reading/Language Arts Scale for Scores in the control group for SWD from 2004 to 2006 where p<.05.

Ho193: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for SWD from 2004 to 2007 where p<.05.

Ho194: There is no statistical significant difference in Reading/Language Arts Scale Scores Arts Scale Scores in the control group for SWD from 2004 to 2008 where p<.05.

Ho195: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for SWD from 2005 to 2006 where p<.05.

Ho196: There is no statistical significant difference in Reading/Language Arts Scale Scores Scale Scores in the control group for SWD from 2005 to 2007 where p<.05.

Ho197: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for SWD from 2005 to 2008 where p<.05.

Ho198: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for SWD from 2006 to 2007 where p<.05.

Ho199: There is no statistical significant difference in Reading/Language Arts Scale Scores in the control group for SWD from 2006 to 2008 where $p<.05$.

Ho200: There is no statistical significant difference in Reading/Language Arts Scale Scores for Scale Scores in the control group for SWD from 2007 to 2008 where $p<.05$.

# Results of T- Tests between Program Years

**Table A 121. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.48 | -7.46 | 12.10 | -2.910 | .014* |
| 2005 | 12 | 648.94 | | 12.21 | | |

P<.05 Ho121: Null Hypotheses rejected there is a statistical significant difference.

**Table A 122. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.48 | -6.01 | 12.10 | -2.996 | .012* |
| 2006 | 12 | 647.49 | | 11.56 | | |

P<.05 Ho122: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 123. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.48 | -7.89 | 12.10 | -2.107 | .059 |
| 2007 | 12 | 649.37 | | 16.53 | | |

P<.05 Ho123: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 124. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.48 | -9.04 | 12.10 | -4.457 | .001* |
| 2008 | 12 | 650.52 | | 11.82 | | |

P<.05 Ho124: Null Hypotheses rejected there is a statistical significant difference.

**Table A 125. Control l Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 648.94 | 1.45 | 12.21 | .935 | .370 |
| 2006 | 12 | 647.49 | | 11.56 | | |

P<.05 Ho125: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 126. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 648.94 | -.43 | 12.21 | -.132 | .898 |
| 2007 | 12 | 649.37 | | 16.53 | | |

P<.05 Ho126: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 127. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 648.94 | -1.58 | 12.21 | -.714 | .490 |
| 2008 | 12 | 650.52 | | 11.82 | | |

P<.05 Ho127: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 128. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 647.49 | -1.88 | 11.56 | -.680 | .510 |
| 2007 | 12 | 649.37 | | 16.53 | | |

P<.05 Ho128: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 129. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 647.49 | -3.03 | 11.56 | -1.925 | .080 |
| 2008 | 12 | 650.52 | | 11.82 | | |

P<.05 Ho129: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 130. Control Mathematics All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 649.37 | -1.15 | 16.53 | -.360 | .726 |
| 2008 | 12 | 650.52 | | 11.82 | | |

P<.05 Ho130: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 131. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 631.76 | -8.56 | 14.42 | -1.919 | .087 |
| 2005 | 10 | 640.32 | | 17.35 | | |

P<.05 Ho131: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 132. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 631.76 | -9.43 | 14.42 | -5.172 | .001* |
| 2006 | 10 | 641.19 | | 12.97 | | |

P<.05 Ho132: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 133. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 631.76 | -8.09 | 14.42 | -1.478 | .173 |
| 2007 | 10 | 639.85 | | 19.47 | | |

P<.05 Ho133: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 134. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 637.76 | -12.81 | 14.42 | -3.051 | .014* |
| 2008 | 10 | 344.57 | | 17.26 | | |

P<.05 Ho134: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 135. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 640.32 | -.87 | 17.35 | -.218 | .832 |
| 2006 | 10 | 641.19 | | 12.97 | | |

P<.05 Ho135: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 136. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 640.32 | .47 | 17.35 | .109 | .915 |
| 2007 | 10 | 639.85 | | 19.47 | | |

P<.05 Ho136: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 137. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 640.32 | -4.25 | 17.35 | -.968 | .358 |
| 2008 | 10 | 644.57 | | 17.26 | | |

P<.05 Ho137: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 138. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 641.19 | 1.34 | 12.97 | .245 | .812 |
| 2007 | 10 | 639.85 | | 19.47 | | |

P<.05 Ho138: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 139. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 641.19 | -3.38 | 12.97 | -.774 | .459 |
| 2008 | 10 | 644.57 | | 17.26 | | |

P<.05 Ho139: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 140. Control Mathematics Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 10 | 639.85 | -4.72 | 19.46 | -.835 | .425 |
| 2008 | 10 | 644.57 | | 17.26 | | |

P<.05 Ho140: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 141. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.32 | -4.18 | 12.96 | -1.370 | .198 |
| 2005 | 12 | 645.50 | | 9.90 | | |

P<.05 Ho141: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 142. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.32 | -1.30 | 12.96 | -.485 | .638 |
| 2006 | 12 | 642.62 | | 10.53 | | |

P<.05 Ho142: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 143. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.32 | -4.82 | 12.96 | -1.229 | .245 |
| 2007 | 12 | 646.15 | | 15.67 | | |

P<.05 Ho143: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 144. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.32 | -2.06 | 12.96 | -.626 | .544 |
| 2008 | 12 | 643.38 | | 6.58 | | |

P<.05 Ho144: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 145. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 645.50 | 2.88 | 9.90 | 2.180 | .052 |
| 2006 | 12 | 642.62 | | 10.53 | | |

P<.05 Ho145: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 146. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 645.50 | -.65 | 9.90 | -.210 | .837 |
| 2007 | 12 | 646.15 | | 15.67 | | |

P<.05 Ho146: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 147. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 645.50 | 2.12 | 9.90 | .751 | .468 |
| 2008 | 12 | 643.38 | | 6.57 | | |

P<.05 Ho147: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 148. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 642.62 | -3.53 | 10.53 | -1.456 | .173 |
| 2007 | 12 | 646.15 | | 15.67 | | |

P<.05 Ho148: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 149. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 642.62 | -.76 | 10.53 | -.284 | .782 |
| 2008 | 12 | 643.38 | | 6.58 | | |

P<.05 Ho149: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 150. Control Mathematics Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 646.15 | 2.77 | 15.67 | .761 | .463 |
| 2008 | 12 | 643.38 | | 6.58 | | |

P<.05 Ho150: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 151. Control Mathematics SDW in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 610.53 | -15.16 | 37.82 | -1.871 | .088 |
| 2005 | 12 | 625.69 | | 18.62 | | |

P<.05 Ho151: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 152. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 610.53 | -18.38 | 37.82 | -2.075 | .062 |
| 2006 | 12 | 629.91 | | 16.86 | | |

P<.05 Ho152: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 153. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 610.53 | -20.23 | 37.82 | -2.860 | .016* |
| 2007 | 12 | 630.75 | | 26.60 | | |

P<.05 Ho153: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 154. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 610.53 | -25.74 | 37.82 | -3.54 | .005* |
| 2008 | 12 | 636.27 | | 17.59 | | |

P<.05 Ho154: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 155. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 625.69 | -3.22 | 18.86 | -.780 | .452 |
| 2006 | 12 | 628.91 | | 16.86 | | |

P<.05 Ho155: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 156. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 625.69 | -5.06 | 18.62 | -.679 | .511 |
| 2007 | 12 | 630.75 | | 26.60 | | |

P<.05 Ho156: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 157. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 625.69 | -10.57 | 18.63 | -2.358 | .038* |
| 2008 | 12 | 636.27 | | 17.59 | | |

P<.05 Ho157: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 158. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 628.91 | -1.84 | 16.86 | -.302 | .768 |
| 2007 | 12 | 630.75 | | 26.60 | | |

P<.05 Ho158: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 159. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 628.91 | -7.36 | 16.86 | -1.563 | .146 |
| 2008 | 12 | 636.27 | | 17.59 | | |

P<.05 Ho159: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 160. Control Mathematics SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 630.75 | -5.52 | 26.60 | -1.094 | .297 |
| 2008 | 12 | 636.27 | | 17.59 | | |

P<.05 Ho160: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 161. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 640.94 | -1.98 | 13.00 | -.632 | .540 |
| 2005 | 12 | 642.92 | | 12.00 | | |

P<.05 Ho161: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 162. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 640.94 | -1.37 | 13.00 | -.502 | .625 |
| 2006 | 12 | 642.31 | | 12.02 | | |

P<.05 Ho162: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 163. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 640.94 | -4.22 | 13.00 | -.984 | .346 |
| 2007 | 12 | 645.16 | | 12.78 | | |

P<.05 Ho163: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 164. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 640.94 | -7.06 | 13.00 | -2.361 | .038* |
| 2008 | 12 | 648.00 | | 8.56 | | |

P<.05 Ho164: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 165. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 642.92 | .60 | 12.00 | .401 | .696 |
| 2006 | 12 | 642.32 | | 12.02 | | |

P<.05 Ho165: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 166. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 642.92 | -2.24 | 12.00 | -.860 | .406 |
| 2007 | 12 | 645.16 | | 12.78 | | |

P<.05 Ho166: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 167. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 642.92 | -5.08 | 12.02 | -2.806 | .017* |
| 2008 | 12 | 648.00 | | 12.78 | | |

P<.05 Ho167: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 168. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 642.32 | -2.84 | 12.02 | -1.180 | .253 |
| 2007 | 12 | 645.16 | | 12.78 | | |

P<.05 Ho168: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 169. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 642.32 | -5.68 | 12.02 | -2.382 | .036* |
| 2008 | 12 | 648.00 | | 8.56 | | |

P<.05 Ho169: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 170. Control Reading/Language Arts All in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 645.16 | -2.84 | 12.78 | -1.077 | .305 |
| 2008 | 12 | 648.00 | | 8.56 | | |

P<.05 Ho170: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 171. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 632.07 | 2.16 | 10.66 | .422 | .683 |
| 2005 | 10 | 629.91 | | 16.45 | | |

P<.05 Ho171: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 172. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 632.07 | -6.51 | 10.66 | -2.704 | .024* |
| 2006 | 10 | 638.58 | | 13.31 | | |

P<.05 Ho172: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 173. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 632.07 | -3.44 | 10.66 | -.563 | .587 |
| 2007 | 10 | 635.51 | | 17.02 | | |

P<.05 Ho173. Null Hypotheses is accepted there is no statistical significant difference.

**Table A 174. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 10 | 632.07 | -6.77 | 10.66 | -1.952 | .083 |
| 2008 | 10 | 638.84 | | 14.38 | | |

P<.05 Ho174: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 175. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 629.91 | -8.67 | 16.45 | -1.594 | .145 |
| 2006 | 10 | 638.58 | | 13.31 | | |

P<.05 Ho175: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 176. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 629.91 | -5.60 | 16.45 | -2.288 | .048* |
| 2007 | 10 | 635.51 | | 17.02 | | |

P<.05 Ho176: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 177. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 10 | 629.91 | -8.93 | 16.45 | -1.631 | .137 |
| 2008 | 10 | 638.84 | | 14.38 | | |

P<.05 Ho177: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 178. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 638.58 | 3.06 | 13.31 | .498 | .631 |
| 2007 | 10 | 635.51 | | 17.02 | | |

P<.05 Ho178: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 179. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 10 | 638.58 | -.26 | 13.31 | -.072 | .944 |
| 2008 | 10 | 638.84 | | 14.38 | | |

P<.05 Ho179: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 180. Control Reading/Language Arts Black in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 10 | 635.51 | -3.33 | 17.02 | -.568 | .572 |
| 2008 | 10 | 638.84 | | 14.38 | | |

P<.05 Ho180: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 181. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.41 | 2.88 | 13.43 | .706 | .495 |
| 2005 | 12 | 638.53 | | 8.71 | | |

**P<.05 Ho181: Null Hypotheses is accepted there is no statistical significant difference.**

**Table A 182. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.41 | 3.80 | 13.43 | 1.137 | .280 |
| 2006 | 12 | 637.61 | | 11.73 | | |

P<.05 Ho182: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 183. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.41 | .28 | 13.43 | .054 | .958 |
| 2007 | 12 | 641.13 | | 13.27 | | |

P<.05 Ho183: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 184. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 641.41 | -1.97 | 13.43 | -.558 | .588 |
| 2008 | 12 | 643.38 | | 6.58 | | |

P<.05 Ho184: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 185. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.53 | .92 | 8.71 | .478 | .642 |
| 2006 | 12 | 637.61 | | 11.73 | | |

P<.05 Ho185: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 186. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.53 | -2.60 | 8.71 | -1.064 | .310 |
| 2007 | 12 | 641.13 | | 13.27 | | |

P<.05 Ho186: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 187. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 638.53 | -4.85 | 8.71 | -2.445 | .033* |
| 2008 | 12 | 643.38 | | 6.56 | | |

P<.05 Ho187: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 188. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 637.61 | -3.52 | 11.73 | -1.215 | .250 |
| 2007 | 12 | 641.13 | | 13.27 | | |

P<.05 Ho188: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 189. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 637.61 | -5.77 | 11.73 | -2.202 | .050* |
| 2008 | 12 | 643.38 | | 6.58 | | |

P<.05 Ho189: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 190. Control Reading/Language Arts Low SES in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 641.13 | -2.25 | 13.27 | -.741 | .474 |
| 2008 | 12 | 643.38 | | 6.58 | | |

P<.05 Ho190: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 191. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 607.62 | -2.95 | 28.12 | -.330 | .748 |
| 2005 | 12 | 610.57 | | 29.70 | | |

P<.05 Ho191: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 192. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 607.62 | -3.78 | 28.12 | -.707 | .494 |
| 2006 | 12 | 611.40 | | 23.41 | | |

P<.05 Ho192: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 193. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 607.62 | -15.06 | 28.12 | -2.252 | .046* |
| 2007 | 12 | 622.68 | | 21.90 | | |

P<.05 Ho193: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 194. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2004 | 12 | 607.62 | -22.21 | 28.12 | -2.891 | .015* |
| 2008 | 12 | 629.83 | | 20.86 | | |

P<.05 Ho194: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 195. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 610.57 | -.83 | 29.70 | -.103 | .919 |
| 2006 | 12 | 611.40 | | 23.41 | | |

P<.05 Ho195: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 196. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 610.57 | -12.11 | 29.70 | -1.660 | .125 |
| 2007 | 12 | 622.68 | | 21.90 | | |

P<.05 Ho196: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 197. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2005 | 12 | 610.57 | -19.26 | 29.70 | -3.036 | .011* |
| 2008 | 12 | 629.83 | | 20.86 | | |

P<.05 Ho197: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 198. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 611.40 | -11.28 | 23.41 | -1.852 | .091 |
| 2007 | 12 | 622.68 | | 21.90 | | |

P<.05 Ho198: Null Hypotheses is accepted there is no statistical significant difference.

**Table A 199. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2006 | 12 | 611.40 | -18.43 | 23.41 | -2.660 | .022* |
| 2008 | 12 | 629.83 | | 20.86 | | |

P<.05 Ho199: Null Hypotheses is rejected there is a statistical significant difference.

**Table A 200. Control Reading/Language Arts SWD in Schools**

| Group | N | Mean | Difference | Standard Deviation | t | Significance* |
|---|---|---|---|---|---|---|
| 2007 | 12 | 622.68 | -7.15 | 21.90 | -1.312 | .216 |
| 2008 | 12 | 629.83 | | 20.86 | | |

P<.05 Ho200: Null Hypotheses is accepted there is no statistical significant difference.

# Appendix B. Focus Group Protocol for CAG Liaisons

# CAG Focus Group Protocol

**November 3, 2009**

1. What are your primary roles and responsibilities as a CAG? Could you please give me some examples of the services you are typically asked to provide?
   - 
2. In your view, what would you state as the primary goals and objectives of the CAG program? How have you worked with your schools to help them meet these goals? Examples? *(Optional probe: How successful would you say the CAG program has been on a scale of 1 – 10 with 1 being "not at all successful" and 10 being "very successful.")*
   - 
3. How many schools do you currently serve? Within those schools, what types of professional development or training/resources have you provide?
   - 
4. How long have you been working with each of your schools, and how often would you say you get to visit each of them?
   - How many hours per visit?
   - How many visits per month/semester/year?
   - Could you tell me about what happens during a typical site visit?
5. What are some changes you have seen in the schools with which you work? What type(s) of evidence of these changes have you seen? *(Optional probe: what feedback have you received from the schools that you work with?)*
   - 
6. What have been some of the greatest successes and challenges you have encountered in working with your schools?
   - 
7. What training and/or preparation did you receive to prepare you for this work? What has been most/least useful?
   - 
8. Is there anything else you would like to say about your work as a CAG that we didn't talk about today?
   - 

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