



2007

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Brandi E. Walker

Georgia College & State University

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Recommended Citation

Walker, Brandi E. (2007) "Effect of Increased Academic Tone on Reading Achievement of Sixth Grade Students with Disabilities," *The Corinthian*: Vol. 8 , Article 9.

Available at: <https://kb.gcsu.edu/thecorinthian/vol8/iss1/9>

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Effect of Increased Academic Time on Reading Achievement of Sixth Grade Students with Disabilities

Brandi E. Walker

*Dr. Sharene Smoot
Faculty Sponsor*

ABSTRACT

This study investigated the effect of increased academic time on reading achievement of sixth grade students with varying mild disabilities ($n=15$) and compare their results to a control group ($n=18$). After receiving a year of intensive reading intervention, the experimental group scored better on the reading section of Georgia's Criterion Referenced Competency Test ($M = 324$, $SD = 28$) than the controls ($M = 316$, $SD = 25$). ANCOVA was statistically significant. The effect size was .33. The boys in the experimental group ($M = 338$, $SD = 28$) outscored the girls ($M = 304$, $SD = 9$). One way of increasing achievement of middle school students with disabilities without extending the actual school day is to substitute a remedial instructional session for an exploratory class.

INTRODUCTION

In 1998 Roy Barnes assumed his second campaign for the governorship of Georgia. He promised sweeping changes for Georgia's educational system. Pledging educational reform that included smaller teacher-pupil ratios and increased academic achievement, Roy Barnes was elected the eightieth governor of the state of Georgia. After receiving the findings of a special task force purposed with analyzing Georgia's school systems, Barnes fashioned The A Plus Education Reform Act of 2000.

The final version, over 175 pages in length, includes many provisions that dramatically changed Georgia's public school system: local school councils, an early intervention program, smaller class sizes, and funding modifications. In addition to allowing for such changes, The A Plus Education Act of 2000

(2000) states:

Without limiting the choices, the local board shall have the authority to schedule exploratory and physical education classes for the remainder of the school day. For students not performing on grade level, as defined by the Office of Education Accountability, the additional time shall be designated for academic instruction to bring such students to grade level performance (p. 115).

Beginning with the 2000-2001 school year, Georgia's students who were considered below grade level were required to receive additional academic time during the school day. This could be made possible by replacing an exploratory or connections class (physical education, art, etc.) with an academic class purposed with dissipating gaps in achievement and bringing students to grade level performance.

Many research studies have examined the use of time and its relationship to increasing student achievement. Clearly, it would make sense that more instructional time would result in higher student achievement. However, it remains important to locate and review literature to find a clear relationship between instructional time and student achievement.

Even 11 years ago researchers were investigating the need to better accommodate the rigor and extent of the American academic course load. The National Education Commission of Time and Learning recommended that "state and local boards work with schools to redesign education so that time becomes a factor supporting learning, not a boundary marking its limits" (NECTL, 1994, p. 31). Patterson (2003) states that the typical 50-minute class period limits the ability of teachers to teach effectively and students to learn effectively. He argues that time constraints restrict teachers to lectures and teacher-guided instruction instead of attempting more time-involved active learning and problem solving. In addition, students are not allowed time to properly take in and analyze information, much less use and practice newly-acquired skills or ideas.

Prominent educational researcher Robert Marzano (2003) named a "guaranteed and viable curriculum" the most important factor of student achievement. Marzano defines a "guaranteed and viable curriculum" as a combination of opportunity to learn and time. He suggests a curriculum that leaves no room for judgment calls. It should be specific and not allow for gaps in the continuum of content. Marzano goes on to say that the curriculum should fit nicely into the school day. He states that extending the school day

is not a feasible option for most school systems, but schools should work diligently to protect the instructional time that is available. He says, "schools should make every effort to convey the message that class time is sacred" (2003, p. 30).

Although most school systems are not able to extend the school day for all children, many school systems can testify to the effects of increased instructional time in after-school programs. During the 2000-2001 school year, Farmer-Hinton (2002) studied the impact of the Lighthouse program, an after-school remedial program. In addition to an hour of recreation time and a healthy afternoon snack, a component of the program was an additional hour of instructional time. The results indicated that students who had participated in the program made one-month gains in reading and math over students who did not participate in the Lighthouse program. In addition, the study found that Lighthouse students in predominantly African-American schools and high-poverty schools were outperforming those in non-minority schools and schools that did not have high poverty percentages.

Rohtman (Winter 2001/2002) noted a similar case at Lanier Middle School in Houston, Texas where educators analyzed their testing data. The school officials noted that 98% of white students passed the state tests in the 1995-1996 school year while only 82% of African Americans and 70% of Hispanics passed. Although the school had earned an "acceptable" rating under the state's accountability structure, the school decided to attempt to improve the statistics by providing supplemental math instruction as well as an after school reading and writing program. After less than five years of implementation, 89% of African Americans and 86% of Hispanics passed the state tests during the 2000-2001 school year.

Although Lanier Middle School made tremendous gains by increasing the instructional time, the achievement gap remains. One of the most challenging tasks of educators is closing this achievement gap. A variety of factors appears to contribute to this gap: racial status, socio-economic status, parental education, and disability. The purpose of this research study will be to examine the impact of increased instructional time on the reading achievement of sixth grade students with disabilities. I believe that Roy Barnes, his educational advisors, and the General Assembly of Georgia were correct in requiring additional academic time for students who were not functioning on grade level. I expect to find that as few as 35 minutes of additional literacy instruction will improve achievement scores in reading.

METHOD

SETTING

With no real industry to call its own, this suburban county is home to commuting families who travel 15 to 30 miles to the nearest city to go to work. Like most typical "bedroom" communities, the county's largest employer is the public school system. Per the most recent FTE count, the county's school system serves just over 5,000 students, 1,281 of which are included in the county's two middle schools (Georgia Department of Education, 2005).

Built in 1955, Middle School A is nestled snugly in a well-established neighborhood in the heart of the county. It houses grades six through eight and serves 727 students (Georgia Department of Education, 2005). Thirty-seven percent of its students are eligible for the Free and Reduced Lunch Program (GA DOE, 2004). The demographics of the school are as follows: 75% are Caucasian, 22% are African American, and the remaining 3% are Hispanic, Asian, or multi-racial (GA DOE, 2005). D. Jackson, the school's secretary (personal communication, July 25, 2005) states that 102 students (14% of the student population) are served by the Program for Exceptional Children, the county's program for serving students with disabilities.

To accommodate its growing population, the county built Middle School B in 2000. Built on the county's southern border, its location, the outskirts of a newly developed subdivision, mirrors the driving force for its construction. It houses grades six through eight and serves 554 students (GA DOE, 2005). Forty-eight percent of its students are eligible for the Free and Reduced Lunch Program (GA DOE, 2004). The demographics of the school are as follows: 68% are Caucasian, 31% are African American, 1% is Asian or multi-racial. J. Tukes, the school's secretary (personal communication, July 25, 2005) reports that 94 students (17% of the student population) are served by the Program for Exceptional Children.

PARTICIPANTS

CONTROL GROUP

The control group consists of 18 sixth grade students with disabilities taught at Middle School A. The group has two students with Emotional and Behavior Disorders (EBD), two students with Mild Intellectual Disabilities (MiID), six students with Specific Learning Disabilities (SLD), and six stu-

dents with Other Health Impairments (OHI), and one student with orthopedic impairments. In addition, one student who receives speech and language services is also included. The population consisted of ten Caucasian students (56%), seven African American students (39%), and one Hispanic student (6%). Of the students in the control group, 67% qualify for the Free and Reduced Lunch Program.

EXPERIMENTAL GROUP

The experimental group consists of 15 sixth grade students with disabilities taught at Middle School B. The group has two students with Emotional and Behavior Disorders (EBD), one student with Mild Intellectual Disabilities (MiID), six students with Specific Learning Disabilities (SLD), and four students with Other Health Impairments (OHI), and one student with autism. The population consisted of nine Caucasian students (60%) and six African American students (40%). Of the students in the control group, 54% qualify for the Free and Reduced Lunch Program.

INSTRUMENTATION

For the purpose of this study, I will be comparing the student achievement as measured by Georgia's Criterion-Referenced Competency Test published by Riverside Publishing Company. Originally implemented in 2000, the CRCT is a summative assessment created to measure how well students acquired knowledge and skills outlined by the Georgia Quality Core Curriculum. The test contains selected-response items only.

The CRCT reports student performance in terms of scale scores ranging from 150 to 450 for each grade and each content area. The Class Roster Summary Interpretation Guide (2002) explains that statistical procedures translate student's responses to a scale score. Additionally, it states that

Since the scale scores are equivalent across test forms given in different years, students obtaining the same score, regardless of which year they took the test, have demonstrated the same performance with respect to Georgia's Quality Core Curriculum (front of pamphlet).

Therefore, if a student scored a 300 in fifth grade and a 315 in sixth grade, he/she would have "improved" by 15 points.

Shirley Millicans, a representative from the Testing Division of the Georgia Department of Education, described the validity and reliability of the GA CRCT. Each test item specifically correlates with curriculum standards. Therefore, the alignment of the assessment to Georgia's Quality Core Curriculum supports the test's validity.

Reliability is indicated by the Cronbach's alpha coefficient, the capacity at which a test consistently measures what it is intended to measure. The alpha value represents the estimated average correlation between all possible split combinations of the test. The Cronbach's alpha value for the fifth grade reading portion of the CRCT is .89 and for the sixth grade reading portion is 0.90. Furthermore, test reliability is enhanced by required administrator and teacher training in test administration standards and use of testing manual.

PROCEDURE

Middle School B answered Roy Barnes' demand with its Extensions of Learning (EOL) program during the 2001-2002. In the beginning, the school offered the additional learning period to every child. As tighter budgets and stricter certification requirements limited teacher availability, the classes have been reserved for those students with the greatest needs. During the 2004-2005 school year, EOL at all grade levels primarily consisted of students with disabilities.

I taught the sixth grade EOL class, a yearlong course lasting approximately 35 minutes. The goal of the class was to increase student vocabulary and arm students with strategies to tackle reading comprehension questions. Barron's 504 Absolutely Essential Words, now available in its fifth edition was the foundation of the teacher-selected curriculum. Barron's describes the resource's word bank as "carefully selected vocabulary collection is the essential core of words that need to be known and correctly used by middle schoolers, ESL students, and other adults for whom English is a second language" (Barron's Educational Series, Inc., 2001, first sentence).

The students were subject to a strict routine, and they were aware of the lessons for each day. On Monday and Tuesday, the students completed a diagram that I created to reinforce the word and its meaning. (See Figure 3.) On Wednesday, I taught students reading comprehension strategies using the passage included in each week's lesson. Students were encouraged to use a

strict step-by-step approach to answer teacher-made questions. In addition, they were given cloze sentences to complete with the week's vocabulary words. On Thursday, the students participated in active learning games and activities to prepare for Friday's tests. On Friday, students were required to complete three tasks: oral reading, spelling, and vocabulary assessments.

The class was unique in that it accelerated the curriculum of the students' general education reading courses. The general education reading teacher used the identical vocabulary-building resource in her classes. She and I worked diligently to remain in sync, teaching the same sets of words during the same weeks. EOL occurred in the early morning, so students were at a great advantage, entering their general education reading class already equipped with the words and their definitions.

I was curious to identify the advantages of this 35-minute course. I concluded that 35 minutes may not be enough to make a difference in reading achievement, defining achievement as improvement on the CRCT reading content area. Determined to discover the actual amount of change, I decided to compare the results of students with disabilities who did receive EOL or a similar extended instructional time period and students who did not receive additional academic classes.

Because all students with disabilities at Middle School B received EOL, I was required to find another group of students with disabilities who did not receive additional academic time. Therefore, I located students who were similar in matched characteristics at a different middle school. Although some students with disabilities at Middle School A were included in an EOL program, not all students were.

Because I would need access to confidential test results, I needed permission. After gaining permission from the principals of both Middle School A and Middle

School B, I talked with the secretaries of respected schools. From Middle School A, I received a list of sixth grade students with disabilities who did not receive remedial literacy instruction. From Middle School B, I received a list of sixth grade student with disabilities served in my remedial reading course. Of both lists, I located students who had both 2004 and 2005 test results and created a spreadsheet including students with disabilities in the sixth grade at Middle School A and Middle School B with the purpose of comparing improvements on the CRCT.

Using CRCT score reports located in the students' permanent academic records, I recorded their results from the 2004 and 2005 administrations of the CRCT. All scores were kept confidential and destroyed at the completion of the research.

DESIGN AND DATA ANALYSIS

2004 GA CRCT scores of both groups was compared using t-tests to determine if the self-efficacy scores for the groups were roughly equal at the beginning of the study. 2005 GA CRCT scores of both groups were compared to see if there was a statistically significant difference between the means of the control and experimental groups. Analysis of covariance was done for each test using the pretest as the covariate to mathematically partial out preexisting differences in the students. Finally, the CRCT results were correlated to see if there is a stronger relationship between these two factors in the experimental group than there is in the control group.

RESULTS

After receiving a year of intensive intervention, the experimental group scored better on the CRCT reading section ($M = 324$, $SD = 28$) than the control group ($M = 316$, $SD = 25$). Using ANCOVA with the previous year's scores as the covariate, the difference in the scores was statistically significant, [$F(2, 30) = 4.65$, $p = .02$, one-tailed] for the grouping variable. Eta squared was .33 and the power for the ANCOVA model was .92. However, Levene's test was significant at the .04 level. The prior year's scores were also used to determine if the two groups were comparable at that time. Although the control group mean of 321 ($SD = 24$) quite a bit higher than the experimental group mean of 304 ($SD = 25$), this difference was not statistically significant using a paired t-test [$t(31) = 1.9$, $p = .07$]. The Cohen's d effect size for the experimental group gain was .75 or an improvement of 25 %. The control group 2005 mean was actually 5 points less than the year before, and Cohen's d is not applicable.

Looking at the experimental group posttest scores, there was no difference in the mean scores by race, however by gender the boys ($M = 338$, $SD = 28$) outscored the girls ($M = 304$, $SD = 9$). See figure 2. Seven out of the nine

boys made gains, and of those seven boys, five made gains of or above 30 points (+30, +41, +53, +57, +58, and +65).

DISCUSSION

The results of this study support the original hypothesis: as few as 35 minutes of additional literacy instruction will improve achievement scores in reading. Sixth grade students with disabilities who received supplementary reading remediation did exhibit significantly higher achievement than sixth grade students with disabilities who did not receive additional reading instruction. The experimental group displayed an improvement of 25%. Also, it was observed that the male participants ($M = 338$, $SD = 28$) in the experimental group outscored the female participants ($M = 304$, $SD = 9$).

According to the 1997 amendments to the Individual with Disabilities Act of 1990 (Department of Education, 1997), "as a condition of State eligibility for funding under Part B of IDEA, children with disabilities are included in general State and district-wide assessment programs." Furthermore, the amendment required that states "provide for the participation of children with disabilities in general State and district-wide assessments—with appropriate accommodations and modifications in administration, if necessary." All of the students in the study, whether they were included in the experimental or the control group, had modifications available to them for testing. These modifications could have included, but were not limited to: read aloud, extended time, flexible scheduling, and small group presentation. Testing modifications are determined by a multidisciplinary team in an Individualized Education Plan (IEP) meeting by examining the child's weaknesses and creating strategies that would help to compensate for them. CRCT testing modifications mirror those that have been in place in the classroom yearlong. It is important to note that accommodations are not intended to give a student with disabilities an advantage over their non-disabled peers. Testing accommodations and modifications are intended to help "level the playing field."

Direct vocabulary instruction may have affected reading achievement. Robert Marzano and his colleagues assert that "direct teaching of vocabulary might be one of the most underused instructional activities in K-12 education" (2001a, p. 293). In *Classroom Instruction that Works*, Marzano discuss-

es the research of Becker (1977). Becker concluded that "systematic vocabulary instruction is one of the most important instructional interventions that teachers can use, particularly with low-achieving students" (Marzano, et al., 2001b, p. 124). In addition, Marzano, Pickering, and Pollack cite research from Stahl and Fairbanks (1986) that found that direct instruction increased student comprehension of new material by 12 percentile points.

Future studies could investigate a teacher's approach to instruction and its effect on the improved reading performance. My instruction was incorporated into a structured and consistent presentation; the students knew exactly what would be taught and how it would be taught each day before they even entered the room. The International Reading Association and National Middle School Association's joint position statement on adolescent literacy learning (2001) states that daily consistency is the best predictor of the gain in reading. Furthermore, they state that consistency is considered "non-negotiable," that is, a daily practice that is easy for teachers to implement, but critical to student achievement. Wolfgang (1999) states that structure gives students a sense of predictability and a sense of security. Students will feel safe, will relax, and will be more receptive to presented material.

An interesting result of this study was the idea that the boys seemed to respond better to this remedial approach than the girls. There is not a great deal of research to explain these results. It is my opinion that the boys reacted to the structure and predictability of the course. However, more research is needed to determine to what the boys were actually responding.

School officials are able to disaggregate scores and identify strengths and weaknesses of individual students, classes, schools, and systems. Legislators, state and local education officials, and the media often use CRCT results to evaluate the quality of education in Georgia. In addition, after the implementation of the No Child Left Behind legislation, Georgia schools use student results in promotion/retention policies for third, fifth, and eighth grades. One cannot determine if the students in this class responded to the additional literacy instruction, the direct teaching of vocabulary, the predictability of the course, or some other factor. However, in the age of high-stakes testing, it is critical for school systems to avoid buying into quick fixes. School systems must identify what is working and implement research-based changes to create a generation of logical thinkers and good test-takers.

TABLE 1

Experimental Group Mean Scores by Eligibility and Gender

	Female		Male	
	Mean	Count	Mean	Count
Autistic	.		345	1
EBD	313	1	321	1
MIID	313	1	.	
OHI	302	2	321	2
SLD	296	2	346	5

FIGURE 1

Group mean scores in 2004 and 2005

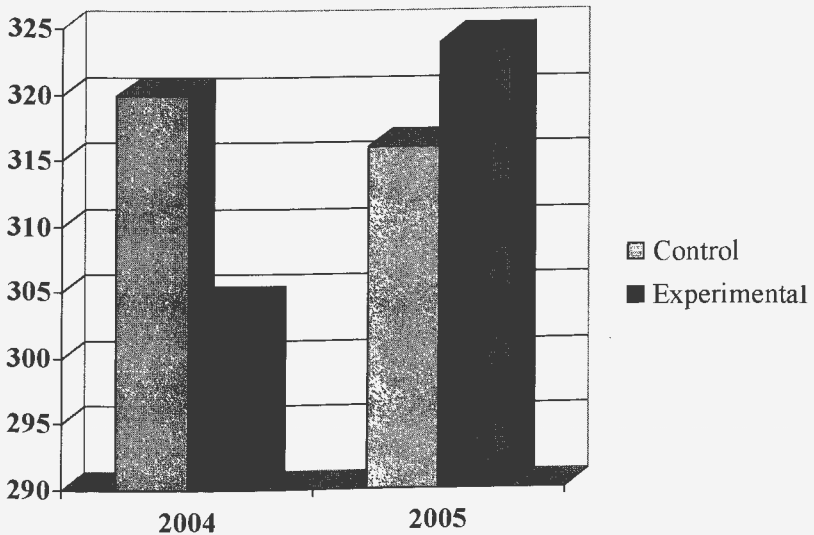


FIGURE 2

Experimental group differences by gender in boxplots

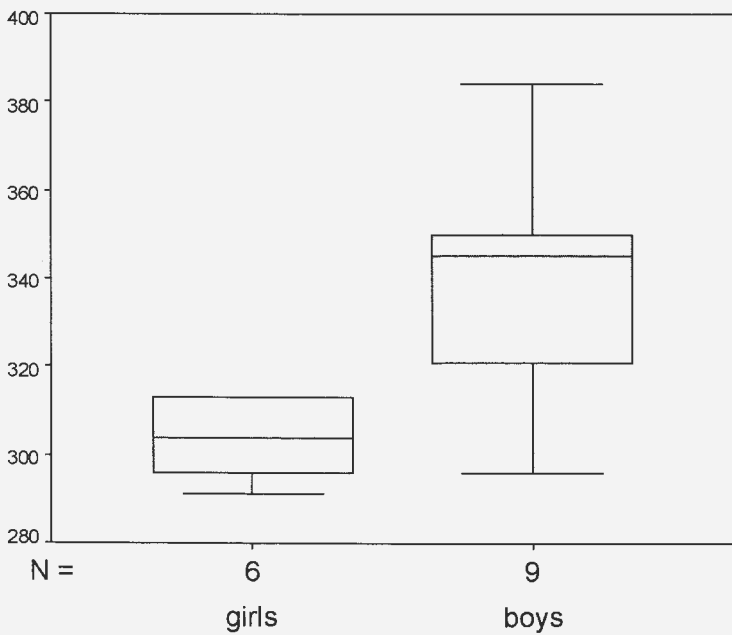
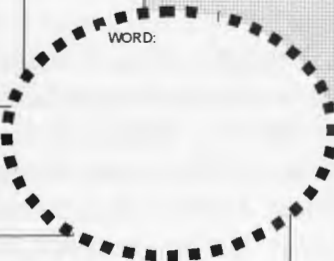


FIGURE 3

Diagram using for vocabulary instruction in EOL

Definition: 	Part of Speech: 	Shape:
Related Words: 		Drawing:
Sentence: <hr/> <hr/> <hr/>		

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