

A STUDY OF THE EFFECTS OF THE ACCELERATED READER PROGRAM ON FIFTH GRADE STUDENTS' READING ACHIEVEMENT GROWTH

CINDY M. MELTON, PH. D.

*Director of Field Experiences
Assistant Professor of Teacher Education and Leadership
Mississippi College*

BOBBIE C. SMOTHERS, ED. D.

Assistant Professor and Coordinator of K-12 Leadership

EUGENE ANDERSON, PH. D.

Chair and Professor of Leadership and Counselor Education

RAY FULTON, PH. D.

Assistant Professor of Leadership and Counselor Education

WILLIAM H. REPLOGLE, PH. D.

Professor and Director of Research of Family Medicine

LISA THOMAS, PH. D.

*Assistant Professor of Curriculum and Instruction
The University of Mississippi*

The purpose of this study was to compare the reading achievement growth of fifth grade students following a year of participation in the Accelerated Reader program with the reading achievement growth of fifth grade students who did not participate in the Accelerated Reader program. The Terra Nova standardized achievement test was used as the pretest and the posttest for reading achievement growth. Results revealed that the Accelerated Reader program participants scored significantly lower than those who did not participate in the Accelerated Reader program. The findings showed that the addition of the Accelerated Reader program to the existing reading program did not result in a significant increase in the reading achievement growth of participating students when compared to the reading achievement growth of students who did not participate in the Accelerated Reader program. In addition, the non-Accelerated Reader students obtained higher adjusted mean rank scores than those students who participated in the Accelerated Reader program.

Introduction

While children of today are growing up in a world where data are being revealed at an alarming rate and knowledge is simply a click away, reading plays an increasingly crucial role in society (Topping & Paul, 1999). The ability to read is not only fundamental for understanding and mastery of every school subject students will encounter,

but literacy also plays a critical and crucial role in students' social and economic lives (Snow, Burns, & Griffin, 1998). As a result, no other factor will have a greater impact on the success of students in Mississippi than their ability to read. With such an emphasis placed on the importance of reading achievement, educational leaders must clearly articulate the expectation that all stu-

dents can become successful readers, while providing the most effective strategies and opportunities for students to succeed in reading and adopt lifelong reading practices.

Accelerated Reader Program

According to Smith and Piele (1997), two of the greatest determinants in creating and sustaining high learner expectations are a strong emphasis on time spent on student learning and a reward for success in the areas of student achievement. The Accelerated Reader program was created to engage students in large amounts of reading practice with authentic material at an individually appropriate reading level, as well as provide rewards for student success in reading achievement. Vollands, Topping, and Evans (1999) showed the Accelerated Reader program as an effective tool for increasing the quantity of reading practice and improving the quality of reading comprehension.

"A valid assessment of reading instruction looks at how well and how often students read" (Winograd & Greenlee, 1986, p.16). The Accelerated Reader program was designed as a tool for teachers to measure student learning in reading achievement, to increase the amount of time spent reading, and to invite and motivate students to read books that are both interesting and challenging. Through the use of computer technology, Accelerated Reader was designed to enable classroom teachers to guide, monitor, and motivate students to improve their reading abilities.

Winograd and Greenlee (1986) stated that the components of a sound reading program include skill mastery, pleasure reading, and informational reading. Through the Accelerated Reader program a student's

zone of proximal development (ZPD) is measured and monitored so students will experience success while being challenged. The student then chooses trade books to read within his or her ZPD, which are color-coded for easy reading level recognition. After finishing a book, students take multiple-choice tests on the classroom computer which immediately analyzes and reports the information to the teacher and child. Points are awarded to each child depending on the quality of answers that were provided on the test, as well as the difficulty level of the trade book selected (Vollands, Topping, & Evans, 1999).

The Accelerated Reader software costs between \$1,500 and \$2000 for a package containing 800 quizzes, the STAR diagnostic test, and a license to serve up to 200 students. Additional software containing approximately fifty quizzes may be purchased for \$79; customized disks cost \$129. There are quizzes spanning at least 23,000 book titles. Accelerated Reader is available for both Macintosh and Windows based programs, and can be used independently in classrooms or networked throughout the school ("Software Sampler," 1998).

Based on recent federal regulations, programs must be proven effective through independent research. The National Institute of Child Health and Human Development and the Department of Education reviewed the Accelerated Reader program and other computerized reading programs. The review showed that these programs did not meet the standards due to a lack of research on the programs' ability to produce long-term gains in reading achievement (Chenowith, 2001). As a result of the lack of academic research on the Accelerated Reader, other reading incen-

tive programs, and a possible loss of funds for school districts, researchers began conducting studies on the effectiveness of these programs.

Literature Review

Chenowith (2001) reported some of the most common challenges facing the Accelerated Reader program. First, students who participated in the Accelerated Reader program did read more books than non-participants; however, when the program ended, so did the reading. Secondly, a group of librarians reported that the program limited students in their choice of books. Certain books were not read if there were no Accelerated Reader tests to accompany those books. Yet, others along with Carter (1996) complained that Accelerated Reader encourages children to read for the wrong reasons, thus, sending an incorrect message to the students. Carter argued that with Accelerated Reader, the focus is on the prize, not on reading. However, one parent opined that it did not matter why a child read, as long as the child becomes a reader (Chenowith, 2001). Finally, one primary concern over the effectiveness of Accelerated Reader was its implementation integrity. With almost 55,000 schools having purchased the program, and only 279,000 educators having received training, the quality of implementation varies greatly. This factor can affect the degree to which the program is successful in motivating readers and in improving reading achievement (Chenowith, 2001; Topping & Paul, 1999).

Additional research findings revealed positive results from the implementation of the Accelerated Reading Program. Vollands, Topping, and Evans (1999) conducted a

quasi-experimental research evaluation on Accelerated Reader focusing on the formative effects on reading achievement and motivation. When compared to gains from regular classroom teaching and an alternative method, at-risk readers using the Accelerated Reader program, even without full implementation, experienced gains in reading scores. Additionally, girls showed increased positive attitudes towards reading. In a similar study by McKnight (1992) improved attitudes towards reading were also reported among fifth grade Chapter I students using the Accelerated Reader program.

In a study by Vollands, Topping, and Evans (1999) norm-referenced test scores of an experimental group exposed to Accelerated Reader were compared to those of a control group not using the program. The experimental group had access to the program for six months, including the collection of points for tangible rewards. The implementation of the program was rated as moderately good, although students did not strictly adhere to their independent reading levels. Both groups had similar pre-test reading abilities and experienced thirty minutes of reading time each day. Two norm-referenced tests were used to study the reading achievement gains. While the group using Accelerated Reader showed a statistically significant increase during the experimental stage, those in the comparison group did not.

In summary, many elementary schools have adopted programs which encourage authentic reading time and aid in the development of reading skills for life. One such program is the Accelerated Reader program, described as a learning information system designed to heighten student interest in lit-

erature and to help teachers manage literature-based reading ("How Accelerated Reader Quizzes," 1998). While nearly 55,000 schools in America and Canada have invested millions of dollars and hundreds of hours to supplement their existing reading programs with the Accelerated Reader computerized reading program and software packages, (Chenowith, 2001) little research has been conducted on individual programs to determine the effectiveness of these programs.

Research Design

A pretest-posttest group design was utilized for this ex-post facto study to determine if a significant difference existed between the reading achievement growth of fifth grade students as measured by the Terra Nova standardized reading achievement test with and without Accelerated Reader program participation. Further study was conducted to determine if a significant difference existed in the reading achievement growth of fifth grade students initially scoring in the lower, middle, and upper quartiles for reading comprehension on the Terra Nova with and without participation in the Accelerated Reader program.

Subjects

In the Jackson Mississippi area, two schools with similar demographics were chosen for this study. At Eastside Elementary, part of the Clinton Public School District, 322 fifth grade students (African-American =142, Caucasian=180) participated in the Accelerated Reader program. The 270 fifth grade students (African-American=128, Caucasian=142) at Gary Road Elementary, part of the Hinds County Public School District,

were not involved in the Accelerated Reader program.

Data Analysis

Analysis of covariance (ANCOVA) was the statistical treatment performed on the data to determine if a significant difference existed between the reading comprehension growth of fifth grade students with and without a year of participation in the Accelerated Reader program. An ANCOVA was performed using the rank of the post-test reading score as the dependent measure, the rank of the pre-test reading score as a covariate, and treatment condition, race, sex, and quartile factors.

Findings

Within quartile one, there was not a statistically significant difference between the treatment conditions. However, quartiles two, three, and four revealed statistically significant differences between the treatment conditions. As noted in Table 1, the control group obtained higher adjusted mean rank scores in these three quartiles.

For the group by race interaction, all possible cell means were compared (Table 2). Within the experimental group, African-Americans ranked significantly lower than did Caucasians. Within African-Americans, those in the experimental group scored significantly lower than those in the control group. Within the control group, the difference between African-Americans and Caucasians was not found to be significant. Finally, African-Americans in the experimental group ranked significantly lower than Caucasians in the control group.

Table 1
Unadjusted and Adjusted Mean Rank by Treatment and Quartile

	n	Unadjusted Mean	Standard Deviation	Adjusted Mean
Experimental				
Quartile 1	55	107.3	70.9	249.1
Quartile 2	93	189.6	88.0	242.1
Quartile 3	104	309.0	101.6	265.7
Quartile 4	70	395.3	83.3	240.5
Control				
Quartile 1	75	84.1	68.5	227.7
Quartile 2	66	199.8	77.5	307.7
Quartile 3	66	341.8	92.9	327.0
Quartile 4	63	435.9	75.6	322.9

Table 2
Bonferroni Pairwise Comparisons of Treatment by Race Means

	Mean Difference	Std. Error	Sig.	95% Confidence level for Difference	
				Lower Bound	Upper Bound
African-American Experimental Vs. Caucasian Experimental	-35.616*	8.305	.000	-57.615	-13.617
Caucasian Experimental Vs. Caucasian Control	-30.201*	8.558	.003	-52.869	-7.533
African-American Control vs. African-American Experimental	63.743*	12.998	.000	29.312	98.173
African-American Control Vs. Caucasian Control	2.074	13.157	1.000	-32.776	36.924

Note. Based on adjusted means.

*The mean difference is significant at the .05 level.

Conclusions

Over the course of a year, the addition of the Accelerated Reader program to the existing reading program in fifth grade classrooms at Eastside Elementary did not reflect a significant increase in reading achievement growth when compared to fifth grade students at Gary Road who did not participate in the Accelerated Reader program. It should be noted that students who did not participate in the Accelerated Reader program showed a significant increase in reading achievement growth when compared to students who had participated in the Accelerated Reader program for a year. In the lowest quartile there was no significant difference between the fifth grade students at Eastside and Gary Road; however students from the middle and upper quartiles who did not participate in the Accelerated Reader program obtained higher adjusted mean rank scores than those who participated in the program. Within the Accelerated Reader group, African-Americans ranked significantly lower than Caucasians. African-Americans in the Accelerated Reader group scored significantly lower than the African-Americans in the non-Accelerated Reader group.

The results from this one-year study indicate that closely monitored longitudinal studies should be conducted to determine if there is a long range effect of the Accelerated Reader program on reading achievement. The review of literature indicated that reading achievement impacts the success of students in all subject areas; therefore, additional research conducted to examine the effect of the Accelerated Reader program on other school disciplines may prove to be a worthy endeavor. Lastly, stud-

ies are needed to determine if there is a significant difference in students' attitudes toward reading before and after participation in the program.

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