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EFFECTS OF CONTENT ENHANCEMENT ROUTINES BY GENDER ON
LITERACY ACHIEVEMENT IN ARKANSAS SCHOOLS

by

Kimberley Renee Calhoon

Dissertation

Submitted to the Faculty of

Harding University

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in Partial Fulfillment of the Requirements for

the Degree of

Doctor of Education

in

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May 2011

EFFECTS OF CONTENT ENHANCEMENT ROUTINES BY GENDER ON

LITERACY ACHIEVEMENT IN ARKANSAS SCHOOLS


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Kimberley Renee Calhoun

Dissertation


Dissertation Advisor

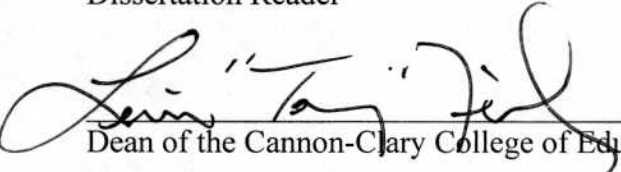
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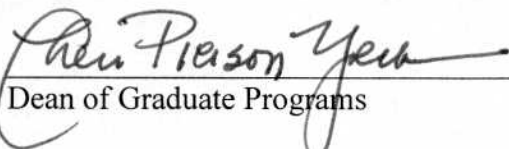
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Dean of the Cannon-Clary College of Education

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Dean of Graduate Programs

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To reach the finish line is truly a blessing from God, and my sincere gratitude goes to him. As Philippians 4:13 states, “I can do all things through Christ who strengthens me.”

ABSTRACT

by
Renee Calhoon, Ed.D
Harding University
May 2011

Title: The Effects of Content Enhancement Routines by Gender on Literacy Achievement in Arkansas Schools (Under the direction of Dr. Michael Brooks)

This research project was intended to provide further insight into the impact of the methodologies utilized in the Arkansas Adolescent Literacy Intervention (AALI) on student achievement and teachers' practices. The purpose of this study was to determine by gender the effects of classes whose teachers utilized the Content Enhancement Routines versus classes whose teachers did not utilize the Routines on literacy achievement for sixth, seventh, and eighth grade students in three regions of Arkansas. In addition, another purpose of this study was to determine how teachers feel about using the routines in their classrooms and how effective they felt the professional development process was for educators involved in the training of Content Enhancement Routines through the AALI in three regions of Arkansas.

The study was conducted in schools representing the southeastern, central, and northeastern regions of Arkansas. Literacy scaled scores from the 2010 Arkansas Benchmark Examination were utilized to measure literacy achievement, and the Content Enhancement Routines Outcome Survey was used to measure teachers' perceptions of the intervention.

The sample for this study included two groups of participants, students and teachers. In each grade, a group of students received Content Enhancement Routines instruction from a classroom teacher who had participated in the intervention while the other group of students from each grade level had not received any Content Enhancement Routine instruction from their classroom teachers. For the second sample, the researcher elicited responses from members of the AALI at each participating school site that participated in the training. The participants considered for this study had been involved in the AALI for at least one year and were present educators in Arkansas schools teaching from grades 4-12.

To address the three hypotheses, a 2 x 2 factorial analysis of variance (ANOVA) was conducted for each using condition by gender as the independent variables and the overall literacy achievement as the dependent variable for sixth, seventh, and eighth graders, respectively. The researcher utilized descriptive statistics to address the research question regarding attitudes toward the Content Enrichment Routines training professional development process through the Strategic Instruction Model in Arkansas.

The results of this study showed no significant interaction effects between type of instruction and gender for the three hypotheses. However, the teacher responses on the Content Enrichment Routines Teacher Outcomes Survey indicated teachers were highly satisfied with their use of the routines, felt the routines had positively impacted their students' learning, and reported system-level supports were in place for their participation in the intervention.

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CHAPTER 1

INTRODUCTION

According to research by the Alliance for Excellent Education (2003), more than 3,000 students drop out of high school every school day. In addition to this alarming statistic, Biancarosa and Snow (2004) showed that approximately 8 million young people between fourth and twelfth grade struggle to read at grade level. One noted reason for this is students' lack of literacy skills. The majority of these students do not struggle to decode the words on a page but struggle to comprehend what they have read. In the era of No Child Left Behind (NCLB) Act of 2001, performing below grade level in reading and writing carries increasingly higher stakes for retention and ultimately the withholding of high school diplomas (United States Department of Education, 2001, 2003). In addition to meeting the NCLB requirements, students face post high school challenges that include a rapidly changing society where literacy skills are crucial to function successfully. Clearly, improving adolescent literacy will assist students in facing these challenges.

Schools have the charge to produce literate citizens who are prepared to face the challenges beyond high school. The application of ineffective or inappropriate teaching practices by many teachers responsible for content instruction contributes to the failure of students meeting these challenges (Cuban, 1984; Cusick, 1983). According to a study conducted by Yates (2007) at Flinders University, quality professional learning

experiences are crucial for teachers. Yates' study suggested that quality professional learning experiences have a greater significance on improving teachers' teaching techniques than their gender, age, or school level. Research by the KU-CRL (2009) indicated that in order to meet the diverse needs of students within grades 4-12 general education classrooms that include students with and without disabilities, classroom teachers must instruct strategically. Strategic instruction actively involves students in the learning process by presenting content in a concrete format, tying it to previous learning, and distinguishing it from unimportant information. This research stated that teachers need two to three hours of professional development in how to instruct strategically. In addition, teachers who implemented their new learning with a high level of enthusiasm and in partnership with students achieved a greater level of strategic instruction. In the Reading Next report to the Carnegie Corporation, Biancarosa and Snow (2004) suggested that the following 15 key elements are found in effective adolescent literacy programs:

- Direct, explicit comprehension instruction
- Effective instructional principles embedded in content
- Motivation and self directed learning
- Text-based collaborative learning
- Strategic tutoring
- Diverse texts
- Intensive writing
- A technology component
- Ongoing formative assessment of students
- Extended time for literacy

- Professional Development
- Ongoing summative assessment of students and programs
- Teacher teams
- Leadership
- A comprehensive and coordinated literacy program

Both students and educators are facing many challenges; however, many tools are available to address this problem.

According to one article, nearly half of all Arkansas students failed the 2008 Arkansas Literacy End of Course exam (“Stakes Increase,” 2008). Docktor (2008) showed only 68.7% of all Arkansas students graduate, a rate slightly lower than the national average. One fact purported by the Arkansas Literacy Councils noted that more than 20% of Arkansas adults read at or below a fifth-grade level—far below the level needed to earn a living wage (Arkansas Literacy Council, 2009). Students who do not obtain needed literacy skills find themselves at a serious disadvantage in personal social functions, in community events, and in the work place (Biancarosa & Snow, 2004). In addition, they are more likely to rely upon public assistance, need health care, and are more prone to criminal activity. Due to these staggering statistics, adolescent literacy has become an explicit focus of the Arkansas Department of Education. This focus will assist Arkansas youth who lack strong literacy skills to become more successful in school and society.

Obviously, this challenge is not a small one. In order to face this challenge in Arkansas, several adolescent literacy professional learning opportunities are offered across the state of Arkansas for educators in grades 4-12. Three of the interventions

offered are the Literacy Lab Classroom Project, the Arkansas' Smart Step Initiative, and the Arkansas Adolescent Literacy Intervention. First, the Literacy Lab Classroom Project consists of 14 days of professional development within a two-year period. The project was created to assist teachers in designing a reading workshop environment in their classrooms and in using assessments to drive instruction. Second, the Arkansas Smart Step Initiative assists teachers and principals in teaching the standards and in how to use assessment in more effectively.

The third initiative is the Arkansas Adolescent Literacy Intervention (AALI), which is a researched validated methodology based on the Strategic Instruction Model developed by Don Deshler, contributor to Reading Next and the KU-CRL (2009). This methodology provides tools for teachers to help adolescents discover how to learn and provides a way for them to accomplish independence and success. The AALI is offered across the state of Arkansas for educators in grades 4-12. The intervention is a professional learning opportunity that caters to the needs of individual schools and school districts. This model provides Response To Intervention Tier I, II, and III interventions that support a rigorous core instruction. The Tier I interventions consist of Content Enhancement Routines (CER) which provide appropriate intervention for students in a general education classroom. The Tier II and III interventions are Learning Strategies that specifically target students who do not learn and retain information from initial instruction. After a school makes a one-year commitment to the intervention, they will be assigned a professional developer to work directly with the administration to determine what CERs and/or Learning Strategies participating teacher will learn. This is determined by using multiple sources of school data.

After identifying which CER or LS will be learned, dates are determined for professional learning opportunities to take place at the school site (M. Cooper, personal communication, April 1, 2008). The professional learning opportunities that will occur in a one-year period of time will include two days of professional development, two days of coaching, two days of fidelity checks, and on-going communication through telephone or e-mail. The professional development days will consist of an AALI/Strategic Instruction Model overview, the learning of one new CER or Learning Strategies, time to prepare with peers for implementation of the new learning, and a discussion of implementation expectations upon returning to classroom. Approximately four weeks later, a coaching visit conducted by the assigned professional developer will occur. During this visit, the professional developer will meet with the participants to problem-solve, co-plan for instruction, co-teach a lesson, or model a lesson. In roughly four more weeks, the assigned professional developer, instructional facilitator (if school has one), and administrator will conduct fidelity checks and provide teacher feedback. Fidelity checks are opportunities to observe specific actions in the teachers' classrooms that demonstrate fidelity, strict observance to the model, to the intervention model. Figure 1 shows a CER and a Learning Strategies fidelity check form utilized by the professional developer conducting the fidelity checks.

Content Enhancement Routine Integrity Checklist			
Teacher Observed:			
Observer:			Date:
Critical Teaching Behaviors	Observed		Comments
Routines are present in the classroom	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Cueing is conducted to prepare for the use of the routine	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Routine is explicitly introduced to the whole class	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Information presented with the device is used repeatedly and in important ways during instruction	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Information in the device is a central part of the evaluations of learning	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Students are engaged in the use of the routine through questioning or assignment completion	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Reviewing of the information is conducted with the routine	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Learning Strategies Integrity Checklist			
Teacher Observed:			
Observer:			Date:
Critical Teaching Behaviors	Observed		Comments
Used Advanced Organizers	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Adjusted teaching to maintain success rate	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Kept students actively engaged	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Interacted respectfully with student	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Provided feedback	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Forecasted generalization throughout	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Provided post organizer	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Maintained lively instructional pace	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Figure 1. A CER Integrity Checklist and a Learning Strategies Integrity Checklist.

According to KU- CRL (2009), CERs help students see the big picture, understand important ideas, respond to classroom tasks, and believe that they are capable of learning. CERs, Tier I interventions, are usually the first interventions to be

implemented because they are designed for all students in a general education setting. Schools typically start here in an attempt to provide solid, core instruction tailored to the needs of all students. The CER methodologies consist of visual devices (graphic organizers), a specific instructional sequence called Linking Steps (mnemonic to help create the visual device), and a Cue-Do-Review process (process for delivering instruction). CERs are designed to help teachers plan for the diverse needs of students and to help teachers involve students in ways that promote content learning. Both teachers and students utilize the CERs to identify critical content to learn. In addition, they assist teachers and students in organizing critical content and linking it to previous learning.

Statement of the Problem

The purposes of this study were four-fold. First, the purpose of this study was to determine by gender the effects of classes whose teachers utilized the Content Enhancement Routines versus classes whose teachers did not utilize the Routines on literacy achievement for sixth grade students in three regions of Arkansas. Second, the purpose of this study was to determine by gender the effects of classes whose teachers utilized the Content Enhancement Routines (CERs) versus classes whose teachers did not utilize the Routines on literacy achievement for seventh grade students in three regions of Arkansas. Third, the purpose of this study was to determine by gender the effects of classes whose teachers utilized the Content Enhancement Routines versus classes whose teachers did not utilize the Routines on literacy achievement for eighth grade students in three regions of Arkansas. Fourth, the purpose of this study was to determine how teachers feel about using the routines in their classrooms and how effective they felt the

professional development process was for educators involved in the training of CERs through the AALI in three regions of Arkansas.

Background

Adolescent Literacy in Arkansas

Arkansas' testing report website shows that 43% of Arkansas' 2009 eleventh grade students taking the Literacy End of Course Exam did not score on grade-level. In comparison, the state reading scores on this same exam are lower than the writing scores. In addition to a large number of students not scoring on grade-level in literacy, 30% of Arkansas schools are in some stage of school improvement; this status was determined by student performance on such exams. Tests taken in the eleventh grade demonstrate an accumulation of all learning throughout the grades. Approximately 40% of all students in grades 3-8 scored less than proficient on the Literacy exams from 2005-2008 (Arkansas Department of Education, 2010). These data indicated that students who struggle in the eleventh grade probably struggled in previous grades as well in literacy. Because of this, getting all students to read at grade level proficiency has become a focus in Arkansas.

History of Content Enhancement Routines in Arkansas

Due to the evidence above, the Arkansas Department of Education (DOE) (2009d) chose to offer the AALI across the state for educators in grades 4-12. Coffman Associate Director for Professional Development for the Arkansas DOE stated that the AALI was chosen because of the research validated Strategic Instruction Model methodologies offered through this intervention. In addition, she stated that the methodologies were an easy fit with the other initiatives offered across the state (personal communication, April 15, 2010). She reported the intervention was not an add-on but an

addition to other current programs. In addition, with the intervention already offered by the University of Central Arkansas-Mashburn Center for Learning, it was an obvious state connection and partnership. Most importantly, the intervention was one that was doable because state, district, and school participants could become certified professional developers and provide the professional development, coaching, and fidelity checks without the assistance of outside professional developers. Ultimately, this method was seen as an intervention model that allowed for capacity building and sustainability by individual schools and districts.

As already stated, the University of Central Arkansas-Mashburn Center for Learning was offering the Strategic Instruction Model methodologies through a summer institute and had been since the early 1980s. This professional learning opportunity was offered to grades 4-12 educators from across the state of Arkansas at the University of Central Arkansas. Participants would attend a two-week institute where they learned about CER from two of the researchers of the Strategic Instruction Model methodologies. After multiple years of offering services through this mode of training, it was evident from participant feedback at the implementation level was low. Due to a lack of implementation by participants, the Director of the Mashburn Center for Learning, Mark Cooper, took the initiative to transform the manner in which services were delivered. The training would no longer be a two-week institute but an event that would take place twice a year at the University of Central Arkansas. Participants would come to the University of Central Arkansas for two days twice a year and learn several CERs. After the learning opportunity, participants would leave with the charge to go back and implement their new

learning within the next two weeks. In approximately four to six weeks, a professional developer would conduct a coaching visit with each participant at his or her school site.

According to Cooper, after providing services within this infrastructure for two years, the implementation level was still not at the desired level (personal communication, April 1, 2008). At this point, small groups of participants were formed to discuss the present barriers to the implementation of the CERs and possible actions to take in regard to increasing the level of implementation. Participants indicated too many CERs were being offered at one time. They preferred to learn and implement one routine prior to learning another CER. In addition, they would rather have the professional development at their school site. In an effort to support the needs of participants, the infrastructure was adjusted once again. At this time, all professional services were provided on-site and a minimal number of CERs were provided at one time. During the period of changing from a summer institute to an on-going professional development, a partnership between the University of Central Arkansas-Mashburn Center for Learning and the Arkansas Department of Education developed. These two entities had the same goal of increasing the literacy skills of adolescents; therefore, the two formed a collaborative effort to accomplish their goal. As this relationship grew stronger, the two entities created a plan to offer this learning opportunity across the state of Arkansas. In July of 2009, an Arkansas Commissioner of Education memo was released offering a CER professional learning opportunity for educators in grades 4-12. A year after the first memo was released, a second memo was posted offering the same services to educators in grades 4-12 for the 2010-2011 school year (Rose, 2010).

Content Enhancement Routines (CERs)

When schools commit to the professional learning opportunity offered in the commissioner's memos, Content Enhancement Routines (CERs) methodologies are taught to the teachers of those schools. Boudah, Bulgren, Lenz, and Schumaker (1994) note that CERs are teaching routines that have been successfully field tested in classrooms containing students with and students without disabilities. Teachers utilize CERs to identify critical content that all students need to learn regardless of their ability. Teachers use visual devices or graphic organizers to transform critical content into formats that are memorable and easy for students to understand. By choosing content that is critical for all students to know, teachers are able to maintain the integrity of their subject and ensure that the learning needs of individuals and of the group are met. In addition, the CERs are created in a partnership between the teachers and their students.

By teachers and students co-creating the visual device, students become more involved in the learning process and become thinkers that are more independent. The ownership created by co-construction also leads to the students having the ability to transfer their learning across subject areas and to become independent at using the routine. Fourteen CERs are grouped in four broad categories, and each of the routines addresses key components of content literacy.

- Planning and Leading Learning
 - Course Organizer
 - Unit Organizer
 - Lesson Organizer

- Increasing Performance
 - Quality Assignment
 - Question Exploration Guide
 - Recall Enhancement
 - ORDER
 - Vocabulary LINCing
- Exploring Text, Topics, and Details
 - Framing Routine
 - Survey Routine
 - Clarifying Routine
- Teaching Concepts
 - Concept Mastery
 - Concept Anchoring
 - Concept Comparison

Teachers determine which routine(s) to utilize from these four categories based on which routine is taught using a visual device, Linking Steps, and a Cue-Do-Review instructional sequence (Boudah et al., 1994). An example of a CER is the Unit Organizer Routine. This routine is one of three routines from the category of planning and leading for learning. The Unit Organizer Routine is used to plan units and then introduce and maintain the big ideas in units and show how units, critical information, and concepts are related. The routine consists of a visual device, a set instructional sequence, and a Cue-Do-Review process. The visual device serves as the centerpiece of the routine and allows

the critical content to be displayed in a graphical manner. The visual device is usually co-created by the teacher and students.

When co-creating the visual device, the teacher uses Linking Steps that include procedures to present the content of the unit in an interactive manner (Boudah et al., 1994). Typically, the teacher will utilize the Linking Steps during the introduction of the unit, instruction of content, and closure of unit. The following is the Unit Organizer Routine Linking steps.

- Create a Context
- Recognize Content Structure
- Acknowledge Unit Relationships
- Frame Unit Questions
- Tie Content to Tasks

While co-creating the Unit Organizer Routine visual device by following the Linking Steps, a Cue-Do-Review process is what the teacher uses to teach the routine. During the Cue phase, the teacher draws attention to the Unit Organizer Routine, emphasizes the benefits of using the routine, and explains what the students will need to do to participate in the routine. The Do phase is the implementation of the Linking Steps to co-create the visual device. The Review phase allows the teacher to check for understanding of the content and the use of the Unit Organizer Routine, and it allows the teacher to clarify any misunderstandings that students may have.

A research study by Boudah et al. (1994) was conducted on the Unit Organizer Routine over an eight-month period with six secondary social studies and science teachers and their students. When teachers used the Unit Organizer Routine, students

with learning disabilities, low achieving students, and average-achieving students had a better understanding of the information taught, and retention levels increased. In addition, their unit test scores on average were 15 percentage points higher than students who were in classrooms of teachers who did not use the Unit Organizer Routine.

Another example of a CER is the Framing Routine and is an example of a routine that explores text, topic, and details. The centerpiece of the Framing Routine is a visual device called a Frame. Figure 2 is the Framing Routine visual device.

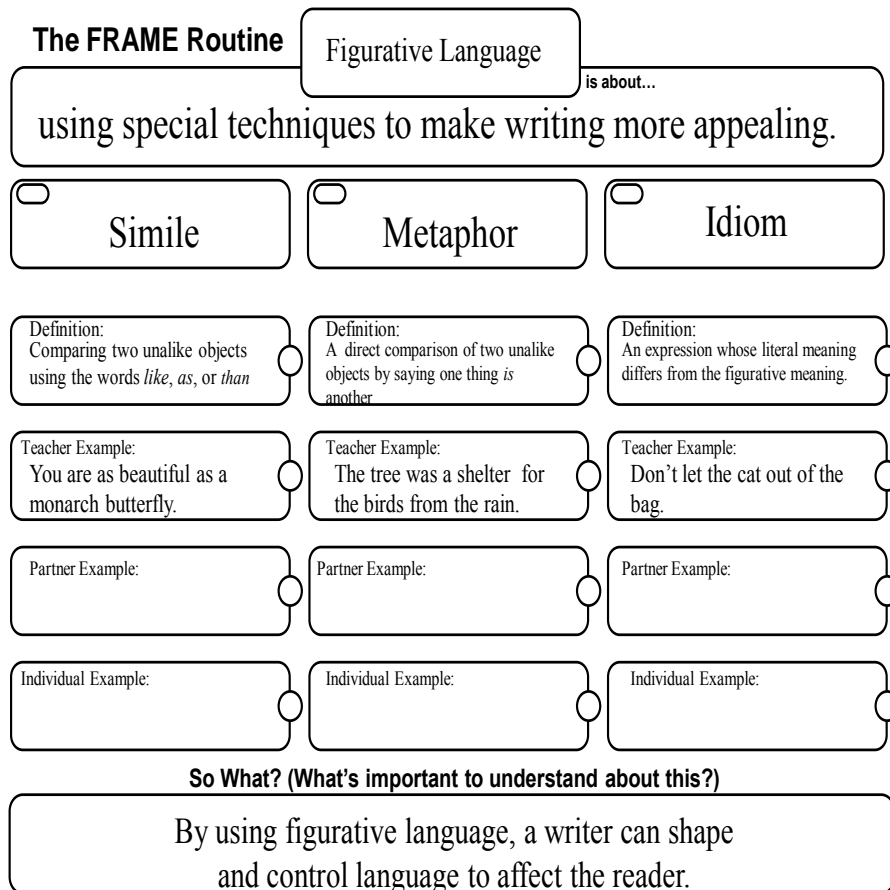


Figure 2. Framing Routine Example.

In addition, it includes Linking steps for guidance during co-creation of the visual device with students. The following is the Framing Routine Linking steps (Ellis, 1998).

- **Focus on the topic**
- **Reveal the main idea**
- **Analyze details**
- **Make a “So What” statement**
- **Extend understanding**

The Cue-Do-Review sequence is utilized in the same manner as with the Unit Organizer Routine. For additional support, all of the 14 routines have an instructional guidebook that teachers receive during professional development activities. Each guidebook provides support for the teacher when using the routine for instructional planning and delivery of instruction. Each CER guidebook includes the following sections: introduction, overview (visual device, linking steps, cue-do-review sequence), enhancement guidelines, instructional materials, and examples (Ellis, 1998).

Professional Development

Professional development for the CERs is not just “sit and get” sessions. CER professional development is primarily on-site, intensive, collaborative, job-embedded, and designed and led by educators that model the best teaching and learning practices. Wagner (2003) noted that in too many districts, time and money for professional development are squandered because efforts are sporadic and not aligned to a few carefully chosen improvement priorities that are informed by and monitored with data. The AALI professional development process was created and later revised to meet the needs of the participants. As of 2008, professional development was started on-site,

follow-up coaching visits and on-going communication was established, fidelity checks were conducted, and administrators started establishing on-going collegial meetings for all participants. This method gave teachers the opportunity to implement what they had learned, to get feedback based on that implementation, and to establish expectations for their use of what they learned. This model mirrors the work by Joyce and Showers (1988) showing that for an increase in implementation of new learning, more intensive assistance, rather than traditional professional development, is required. This intensive assistance includes follow-up activities, classroom coaching, monitoring, peer support, and evaluating impact on student learning. According to this research, only 10-15% of staff who participated in training sessions actually implemented new strategies in the classroom unless there were frequent and extensive coaching opportunities. It was evident that for AALI participants to implement the CERs, a supportive professional development plan was needed.

Hypotheses and Research Question

The initial review of literature noted that CERs had the potential to affect the cognitive outcomes of students in a positive manner. Because the Arkansas Department of Education (2009c) chose this program as one avenue of improving reading achievement in the schools, the researcher chose to study the program's effects on literacy achievement. Therefore, the following null hypotheses and research questions were generated to guide the study:

1. No significant difference will exist by gender between sixth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement

Routines and those whose teachers did not utilize the Routines on literacy achievement.

2. No significant difference will exist by gender between seventh grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement.
3. No significant difference will exist by gender between eighth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement.
4. How do teachers trained in Content Enhancement Routines in three regions of Arkansas feel about using the routines in their classrooms and feel about the professional development process of the Strategic Instruction Model?

Description of Terms

Arkansas adolescent literacy intervention. The Arkansas Adolescent Literacy Intervention is a research-validated methodology based on the Strategic Instruction Model by Deshler, contributor to *Reading Next* (Biancarosa & Snow, 2004), and the KU-CRL (2009).

Arkansas consolidated school improvement process. The Arkansas Comprehensive School Improvement Planning model is an annual planning and fund distribution design required by the state in all Arkansas public and charter schools (Arkansas Department of Education, 2009b).

Arkansas school improvement status. School Improvement is the status of schools and districts based on expected performance gains for student achievement on the Arkansas Benchmark Exam or End of Course Exam. Every school in Arkansas has a school improvement label: Achieving, Targeted Improvement, Targeted Intensive Improvement, Whole School Improvement, Whole School Intensive Improvement, and State Directed (Arkansas Department of Education, 2009d).

Arkansas smart accountability system. The Arkansas Smart Accountability System is a model that allows the state to better distinguish among schools by applying different labels, resources, and consequences according to school improvement status. Smart Accountability sets the tone for a coherent and sustained statewide system of support. The goal is not solely School Improvement but interventions for a transformational education change (Arkansas Department of Education, 2009c).

Content enhancement routines. CERs are instructional methods that rely on using teaching devices to organize and present curriculum content in an understandable and easy to learn manner (KU-CRL, 2009).

Fidelity checks. Fidelity Checks are brief observations or classroom walkthroughs conducted to provide teachers feedback concerning the fidelity of implementation of the observed routines during instruction (Arkansas Department of Education, 2009c).

Response to intervention. Response to Intervention are strategies that enable educators to tailor instructional interventions to children's areas of specific need as soon as those needs become apparent (VanDyke, 2009).

Strategic instruction model. The Strategic Instruction Model is a set of methodologies promoting effective teaching and learning of critical content in schools (KU-CRL, 2009).

Significance

According to Fullen (2003), leaders must pay close attention to whether they are generating passion, purpose, and energy on the part of the teachers as strategies unfold. Failure to improve teachers' practices is an indicator that the strategy will fail sooner rather than later. This study was important to Arkansas educational decision-makers because teachers' perceptions of the professional learning process, support systems, and obstacles influence the implementation of the AALI methodologies. In addition, student achievement outcomes were of importance to all stakeholders involved in the intervention because the ultimate goal was to improve adolescent literacy skills. Ultimately, if teachers find value in the intervention and find it easy to implement, the implementation level increases, resulting in increased student achievement. In addition, these outcomes will influence potential school districts' interest and commitment to the intervention model, which results in a focus on improving the literacy skills of Arkansas adolescents.

Process to Accomplish

Design

A quantitative, causal-comparative strategy was utilized in this study. The independent variables for the first three statements of the problem were instructional strategy (CER vs. traditional strategies) and gender (male vs. female). The dependent variable for the statements was the measured literacy achievement. The subjects of the

first three statements were sixth, seventh, and eighth grade students, respectively. The dependent variable for the fourth statement of the problem was the measured attitudes toward the CER professional development process. The subjects for the fourth statement were the teachers who had been trained with the CER procedures.

Sample

Students chosen to participate in this study were 2009-2010 sixth, seventh, and eighth graders from various middle schools and junior highs from across Arkansas. The sample consisted of two groups of participants. In each grade, a group of students received instruction in at least two CERs from a classroom teacher who had participated in the AALI. The other group of students from each grade had not received any CER instruction from their classroom teacher due to their teacher not participating in the AALI. Both groups of students were in general education classrooms receiving instruction in a general education curriculum with heterogeneous grouping of students.

Through survey administration, the researcher ascertained responses from members of the AALI regarding their perceptions and experiences concerning the CER instructional process and professional learning opportunity. The participants considered for this study had been involved in the AALI for at least one year. All participants considered were present educators in Arkansas schools grades 4-12. The participants were from schools across Arkansas and varied in gender, age, years of teaching experience, content taught, and grades taught. The schools represented statewide geographical diversity. They were from the northeast, south, and central portions of the state. The population of participants was overwhelmingly female, with a wide range of years of teaching experience (0-35 years). Participation was voluntary for the study;

however, participation in the state intervention was optional for some members and not for others. Participants in the study who did not choose to attend the professional development had been required to attend by their supervisor. Each participant learned a different number of routines because a differentiated professional development plan was created for each participating school. However, each participant received professional development in a minimum of two routines and received two coaching visits and two fidelity checks per school year.

Instrumentation

The Arkansas Comprehensive Testing, Accountability, and Assessment Program's (ACTAAP) Augmented Benchmark Test scale scores (Arkansas Department of Education, 2009a) were used to measure the literacy achievement for the three hypotheses in the study. Grades 3-8 Augmented Benchmark Exam is considered an augmented test because it consists of two testing components: criterion-referenced testing and norm-referenced testing. The criterion-referenced testing portion was utilized for this study. This portion of the exam was implemented as part of ACTAAP and in response to ACT 35, which requires the State Board of Education to develop a comprehensive testing program that includes assessment of the challenging academic content standards defined by the Arkansas Curriculum Frameworks (ACTAAP, 2009). The literacy portion of the exam consists of a reading and a writing section, and these sections are scored with equal value. The reading portion measures students' understanding of three types of text: literary, content, and practical. Students are asked to answer multiple-choice questions and to respond in writing to one open-ended question per type of text. In addition, they are assessed on their writing skills (content, style,

sentence formation, usage, and mechanics). This portion of the exam contains multiple-choice questions and writing prompts.

The CER Teacher Outcomes Questionnaire was used to address the research question of the study and measured how teachers trained in CERs in Arkansas feel about the professional development process of the Strategic Instruction Model. Each questionnaire included 13 items using a 5-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree.” A mean rating was calculated for each group on each item.

Data Analysis

To address the first hypothesis, a 2 x 2 factorial analysis of variance (ANOVA) was conducted using condition by gender as the independent variables and the overall literacy achievement as the dependent variable for sixth graders. The second hypothesis was analyzed by a 2 x 2 factorial ANOVA with condition by gender as the factors and the overall literacy achievement as the dependent variable for seventh graders. Hypothesis number three was examined by a 2 x 2 factorial ANOVA using condition by gender as the independent variables and the overall literacy achievement as the dependent variable for eighth graders. The researcher utilized descriptive statistics to address the research question regarding attitudes toward the CERs training professional development process through the Strategic Instruction Model in Arkansas. To test the three null hypotheses, the researcher used a two-tailed test with a .05 level of significance.

CHAPTER II

REVIEW OF RELATED LITERATURE

In their report to the Carnegie Corporation, Biancarosa and Snow (2004) recommended that educators must figure out how to ensure that every student gets beyond the basic literacy skills of the early elementary grades, to the more challenging and rewarding literacy of the middle and secondary school years. This reading initiative will require teaching students new literacy skills including how to read purposefully, how to select materials that are of interest, how to learn from those materials, and how to figure out the meanings of unfamiliar words. In addition, students will have to learn how to integrate new information with information previously known, how to resolve conflicting content in different texts, how to differentiate fact from opinion, and how to recognize the perspective of the writer. In short, students must be taught how to comprehend. In response to these types of initiatives, Arkansas educators and policymakers' are focusing on ways to improve adolescent literacy.

This chapter was dedicated to reviewing the literature in the area of improving adolescent literacy and was divided into five sections. The first section presented the role history played in improving reading. The second section focused on the advantages and barriers of adolescent literacy professional development. The third section reviewed the research regarding adolescent literacy professional development. The fourth section summarized the effectiveness of instructional strategies, interventions, and programs on

improving adolescent literacy. Finally, the fifth section reviewed the research on CERs and their impact on adolescent literacy.

History of School Improvement in Literacy Skills

In the mid 1900s, a high school dropout could compete for jobs that secured a comfortable living because only basic literacy skills were needed. According to research in the Reading Next document, employees only had to be able to decode or recognize words to fulfill their work responsibilities successfully (Biancarosa & Snow, 2004). Comprehension of what employees read or the ability to understand challenging text was not necessary to compete for jobs. However, that is not the current reality. According to research by Bottoms (2004), approximately 15 million students graduated from high school reading at below the basic level in the last 15 years. This has led the nation to focus on improving literacy instruction in schools. Most of these attempts for improvement have been in the early grades. Elementary teachers have received professional development in how to teach students to decode or recognize words. These skills are necessary for students to be successful in the elementary grades; however, simple decoding does not necessarily prepare students for the higher grades. A high achieving elementary student might not be successful in the upper grades because a new set of literacy skills is needed. These skills include being able to establish purposes for reading, to construct meaning from text, and to interact with the text by synthesizing what they read with their previous background knowledge. All of these skills are associated with the common term *comprehension*.

Five generalizations flow from the research of the past decade on the nature of reading. First, skilled reading is constructive. Becoming a skilled reader requires learning

to reason about written material using knowledge from everyday life and from disciplined fields of study. Harvey (1998) reports that true comprehension goes beyond literal understanding of the text and involves the reader's interaction with the text. Beck, McKeown, Hamilton, and Kucan (1997) defines comprehension as "being able to explain information, connect it to previous knowledge, and use information" (p. 3). Second, skilled reading is fluent. Becoming a skilled reader depends upon mastering basic processes to the point where they are automatic, so that attention is freed for analysis of meaning. Rasinski (2003) says that "reading fluency refers to the ability of readers to read the words in text effortlessly and efficiently with meaningful expression that enhances the meaning of the text and creates a sense of prosody" (p. 26).

Third, skilled reading is strategic. Becoming a skilled reader requires learning to control one's reading in relation to one's purpose, to the nature of the material, and to one's comprehension. Pressley (2002) found that students who receive instruction in a repertoire of reading strategies performed better than students who receive traditional instruction when asked to interpret texts. Fourth, skilled reading is motivated. Becoming a skilled reader requires learning to sustain attention and learning that written material can be interesting and informative. Harvey's (1998) research demonstrated that "acquiring information allows us to gain knowledge about the world and ourselves in relation to it. We build up our store of knowledge...and in this way reading can change thinking" (p. 75). Students must be motivated to read because it effects how they think with and interact with the world. Fifth, skilled reading is a lifelong pursuit. Becoming a skilled reader is a matter of continuous practice, development, and refinement. As Mooney (1988) writes, "there is a difference in being an avid, lifelong reader, and

between ‘reading anything’ and being able to pursue an interest, solve a problem, or satisfy a need” (p. 75).

In addition to the need for adolescent learners to use the five generalizations to reading, secondary teachers must become familiar with their role as a reading teacher in their content area classrooms. Content area teachers play an essential role in the improvement of adolescent literacy development.

Advantages and Barriers to Professional Development

With the task to improve adolescent literacy, professional development must entail different experiences from the traditional *one-shot* workshop or training session. Teachers are seeking professional development that will have a positive impact on their instructional practices and student learning outcomes. Unfortunately, most professional learning opportunities are group presentations or coursework that does not necessarily focus on the individual needs of the teachers and their students. The alternative idea that some states, districts, and schools are adopting is high quality professional development that can make a difference in teaching practices and student learning. Examples of high quality professional development include co-planning lessons and units, developing assessments, reviewing student work, and problem-solving classroom dilemmas. The National Staff Development Council (2001) provides 12 standards that define high-quality professional development for improving student achievement. They noted that staff development that improves students learning

- Organizes adults into learning communities whose goals are aligned with those of the school and district. (Learning Communities)

- Requires skillful school and district leaders who guide continuous instructional improvement. (Leadership)
- Requires resources to support adult learning and collaboration. (Resources)
- Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement. (Data-Driven)
- Uses multiple sources of information to guide improvement and demonstrate its impact. (Evaluation)
- Prepares educators to apply research to decision making. (Research-Based)
- Uses learning strategies appropriate to the intended goal. (Design)
- Applies knowledge about human learning and change. (Learning)
- Provides educators with the knowledge and skills to collaborate.
(Collaboration)
- Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement. (Equity)
- Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately. (Quality Teaching)
- Provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Family Involvement, p. 5)

High quality professional development is a paradigm shift from the traditional one-time workshop or training approach and creates an opportunity for educators to

establish a systemic approach to addressing the needs of both teachers and students. In addition, it allows for schools and districts to reshape the approach in which they provide professional development. However, with any new approach, there are many questions to answer and barriers to overcome. The first deals with the expense of the development opportunity. According to the National Commission on Teaching and America's Future (1996), investments in teacher knowledge and skills net greater increases in student achievement than other uses of an educational dollar. Peterson (1999) identifies other questions and barriers such as the following: Where will we find time? When will it be? Will we use our time well? Who pays for it? Other questions this researcher has asked include the following: Who will be involved? How do I get teachers to collaborate? What will be the focus of their collaboration? What if it does not work? Who will lead?

Fullan and St. Germain (2006) caution educators to remember that even the best-planned change efforts will not always go smoothly. A common experience for many people and groups as they navigate change is the implementation dip. This phenomenon occurs for most people at the beginning stages of learning something new, whether it is learning a new golf swing or learning a new instructional practice. The dip in performance and competence comes as people not only learn new skills but unlearn established habits.

Professional Development on Reading Achievement

When asked to integrate reading instruction in content area classrooms, teachers typically note that they are not reading teachers. Moore, Bean, Birdyshaw, and Rycik (1999) reported,

High school teachers often feel a great responsibility to impart knowledge about subjects such as science or history in which they are expert. This focus on subject matter is supported by the typical organization of high schools with the faculty assigned to separate departments and the day divided among separate subjects. Many teachers come to believe that teaching students how to effectively read and write is not their responsibility. Without intending to do so, they might send subtle messages that adolescents' continued growth in reading and writing is incidental. (p. 4)

The reality is that students leave elementary schools with the ability to decode or recognize words but are not able to read for learning. To ensure that students receive the literacy instruction needed at the secondary level, administrators must ensure that teachers receive the appropriate professional learning opportunities to address these needs.

A position statement presented by the Commission on Adolescent Literacy of the International Reading Association based on research by Moore (1996) states, "Adolescents deserve teachers who understand the complexities of individual adolescent readers, respect their differences, and respond to their characteristics" (p. 8). According to Allington and Johnston (2001), a series of studies on reading instruction confirms what was probably obvious from the beginning. "Good teachers, effective teachers, manage to produce better achievement regardless of which curriculum materials, pedagogical approach, or reading program is selected" (p. 2). To ensure that effective teachers are providing adolescent literacy instruction, administrators must use the best hiring and professional development practices possible.

Darling-Hammond (1999) conducted a study examining the ways in which teacher qualifications and other school inputs are related to student achievement across states. The study utilized data from 50-state surveys of policies, state case study analyses, the 1993-1994 Schools and Staffing Surveys, and the National Assessment of Educational Progress (NAEP). The outcomes from both the qualitative and quantitative analyses imply that policy investments in quality of teachers may be related to improvements in student performance. This analysis suggests that policies adopted by states regarding teacher education, licensing, hiring, and professional development may make an important difference in the qualifications and capacities that teachers bring to their work. In addition, the NAEP has acknowledged how specific kinds of professional learning opportunities for teachers correlate with their students' reading achievement. On the average, in the 1992 and 1994 assessments, fourth grade students of teachers who were fully certified, who had a master's degrees, and who had professional course work in literature-based instruction did better than other students on reading assessments (National Center for Education Statistics 1994, 1995).

Literacy Collaborative (2010) initiated a four-year longitudinal study of teaching and student achievement in 17 Literacy Collaborative schools. The study was completed in 2009, and the results indicated a large positive effect of the program on student achievement. In addition, the study was designed to study growth in teacher expertise and changes in professional communication networks in Literacy Collaborative schools.

The schools involved in the study were located in eight states in the Northeast, South, and Midwest (Literacy Collaborative, 2010). Low-income students made up 40% of the students across the participating schools. The 17 literacy coordinators involved in

the study received training at university training sites during the first year of new learning. The next three years involved the 17 literacy coordinators implementing their new learning within their schools. The research team collected student achievement data from Kindergarten through third grade DIBELS and Terra Nova from the fall and spring administration. In addition, classroom observational data and literacy coordinators' logs of coaching and professional development activities were collected. Finally, teacher and literacy coordinators completed a survey and participated in interviews. The following key findings were reported:

- Students' average rates of learning in grades K-2 increased by 16% in the first implementation year, 28% in the second implementation year, and 32% in the third implementation year.
- Teacher expertise increased substantially and the rate of improvement was predicted by the amount of coaching a teacher received.
- Professional communication amongst teachers in the schools increased over the three years of implementation and the literacy coordinators became more central in their schools' communication networks. (p. 2)

At the end of the study, the research team had collected data on 8,500 children who had passed through grades K-3 in the schools and 240 teachers.

Darling-Hammond, Wei, and Orphanos (2009) examined what research has discovered about professional learning that improves teachers' practices and student learning. This report indicated that rigorous research suggests that sustained and intensive professional learning for teachers is related to student-achievement gains. An analysis of well-designed experimental studies found that a set of programs, which offered

substantial contact hours of professional development (ranging from 30-100 hours in total) spread over 6 to 12 months, showed a positive and significant effect on student achievement gains. According to the research, the intensive professional development efforts that offered an average of 49 hours in a year boosted student achievement by approximately 21 percentile points. Other efforts that involved a limited amount of professional development (ranging from 5-14 hours in total) showed no statistically significant effect on student learning. These results came from a meta-analysis of 1,300 research studies and evaluation reports, from which researchers identified nine experimental or quasi-experimental studies using control groups with pre- and post-test designs that could evaluate impacts of professional development on student achievement.

Effectiveness of Traditional Instructional Strategies

According to Marzano, Pickering, and Pollock (2001), the art of teaching is becoming the science of teaching, which is a new phenomenon. Wright, Horn, and Sanders (1997) noted that the most important factor influencing student learning is the teacher. In addition, they stated the immediate and clear implication of this finding is that seemingly more can be done to improve education by improving the effectiveness of teachers than by any other single factor. Effective teachers appear to be effective with students of all achievement levels regardless of the level of heterogeneity in their classrooms. If the teacher is ineffective, students under the teacher's guidance will show inadequate progress academically regardless of how similar or different they are regarding their academic achievement. Instructional strategies utilized by teachers in the classroom should be used to capitalize on the opportunity of enhancing student achievement. Many instructional strategies are available for educators to learn how to

use and implement within their classrooms practices. The Mid-continent Research for Education and Learning (McREL) study led by Cohen (1988) analyzed selected research studies on instructional strategies that could be used by teachers in K-12 classrooms. A research technique referred to as meta-analysis, combining the results from multiple studies to determine the average effect of a given technique, was utilized when analyzing the data collected for this study. One of the main goals of this study was to identify those instructional strategies that had a high probability of enhancing student achievement. According to the study outcomes, nine instructional strategies yielded greater probability of enhancing student achievement for all students in all subject areas and all grade levels. Figure 3 includes the nine identified categories of instructional strategies that affect student achievement as identified in the McREL study as having the greatest affect on student achievement.

Categories of Instructional Strategies That Affect Student Achievement				
<i>Category</i>	<i>Mean ES</i>	<i>Percentile Gain</i>	<i>No. ESs</i>	<i>SD</i>
Identifying Similarities and Differences	1.61	45	31	.31
Summarizing and Note Taking	1.00	34	179	.50
Reinforcing effort and providing recognition	.80	29	21	.35
Homework and practice	.77	28	134	.36
Nonlinguistic representations	.75	27	246	.40
Cooperative learning	.73	27	122	.40
Setting objectives and providing feedback	.61	23	408	.28
Generating and testing hypothesis	.61	22	63	.79
Questions, cues, and advance organizers	.59	22	1,251	.26

Figure 3. Categories of instructional strategies that affect student achievement (Marzano et al., 2001).

A graphic organizer is an instructional tool students use to organize and structure information and concepts and to promote thinking about relationships between concepts (Zolman, 2009a). These tools assist students in organizing ideas, words, and concepts in a meaningful and memorable manner. The use of graphic organizers makes reading an active process in which information is stored in one's memory for recalling information. In addition, organizers assist in making connections between categories and sub-categories.

Improving students' problem-solving abilities is a major, if not the major, goal of middle grades mathematics (National Council of Teachers of Mathematics, 1989, 1995, 2000). Due to this goal, nine inner-city middle school teachers and a university mathematics instructor conducted an action research project (Zollman, 2006a, 2006b). The project was intended to study a problem-solving instructional approach in which students used graphic organizers. The goal of the project was to improve student achievement in three areas on their state's math assessment in open-response problems: mathematics knowledge, strategic knowledge, and mathematical explanation. The teachers involved in the project used a four corners and diamond graphic organizer with students in their math classes to address open-response questions. Teachers administered pre- and post-tests with their students to see if the four corners and diamond organizer affected student performance. The project involved 186 students who received instruction in the use of this graphic organizer. Of the 186 students who took the pre-test, only 4% in math knowledge, 19% in strategic knowledge, and 8% in explanation scored at the "meets" or "exceeds" levels on the open response items. After receiving instruction in the graphic organizers, the percentage of students scoring at the "meets" or "exceeds" levels

on each of the open-response item categories on the post-test was 75% for math knowledge, 68% for strategic knowledge, and 68% for explanation. In addition, teachers indicated that the use of the four corners and diamond graphic organizers was beneficial for all learners regardless of ability level (Zollman, 2009).

Thinking Maps are visual tools used to facilitate the learning process of what one has read and the ability to apply the newly acquired knowledge (Manning, 2002). Hyerle (Hyerle & Curtis, 2001), the Thinking Maps' creator, professed that enhanced visual tools help students learn more effectively and efficiently; lessons reportedly can be taught in less time with increased retention.

In West Newton, Massachusetts, a learning prep school implemented Thinking Maps across their elementary, middle, and high schools (Manning, 2002). Children who had documented, moderate, language-based learning disabilities received specialized educational services at these schools. Over 300 students attended these schools from 91 towns across Massachusetts, New Hampshire, and Rhode Island. In September 2002, Thinking Maps were introduced in every grade and subject including counseling, speech, and occupational therapy sessions; shop classes; and other electives. Each Thinking Map first was introduced in the students' Language Arts classes, allowing one week for introductory exercises. Other content areas reinforced the map the following week after its introduction. On the average, maps that addressed higher-level-thinking processes with complex cognitive development took an additional week for further reinforcement across the curriculum. Student progress was monitored continuously to ensure that students were able to internalize the maps and become fluent with the thinking processes. By December 2002, the Massachusetts Comprehensive Assessment System (MCAS)

Retest had been administered, and all but one Thinking Map (the Bridge Map, which the school's students found to be the most abstract and difficult) had been introduced. During the administration of the test, nearly every student used Thinking Maps to organize written information on the Language Arts and Mathematics open response questions as well as on the Literature portion of the exam.

When the MCAS Retest scores arrived in March 2003, the schools' administrators credited significantly improved test scores to Thinking Maps because no other variables had been introduced during the academic year (Manning, 2002). After interpreting 2002 MCAS Language Arts Retest scores, administrators noted that reading comprehension increased substantially. Scores rose from zero and one to three and four (ranging from low to high comprehension ratings). In previous years, few students of the approximately 45 students who took the test scored a three and a score of four was even rarer. On the 2002 MCAS Language Arts Retest scores, out of a field of 41 students, 13 students scored at least one three on an open response question, and 20 students scored at least one four, indicating that comprehension had increased to passing levels for 33 out of 41 students. With regard to the 2002 MCAS Mathematics Retest scores, out of a field of 56 students, five students scored at least one three on an open response question, and 24 students scored at least one four, indicating that comprehension had increased to passing levels for 29 out of 56 students.

Effectiveness of Content Enhancement Routines

Teachers utilize the CERs to assist students in acquiring critical content by organizing information, providing explicit instruction when necessary, and assuring that students are actively involved in partnership learning with the teacher and other students.

The 14 routines address different curricular needs and academic demands of students. Teachers must make strategic instructional decisions regarding what CER to utilize according to the content to be learned and the needs of students. According to Bulgren, Lenz, Scumaker, Deshler, and Marquis (2002), CERs provide a way for teachers to think about and plan for the spectrum of learning and literacy demands ranging from basic knowledge and comprehension to higher-order thinking processes involved in manipulation, extension, and generalization of learning. In addition, they state that students respond to teachers' preferences to teach strategic approaches to learning at the same time as they teach content, to utilize modifications in curricular materials, and to use a variety of teaching methods. CERs also provide an efficient way for general education teachers; content area experts; special education teachers; and professional development instructors, coaches, and researchers to communicate and collaborate on learning needs and supports.

Bulgren et al. (2002) conducted two studies in the use of routines in diverse secondary content classrooms. Study one was conducted in an experimental setting to determine whether the routine had positive effects under tightly controlled conditions. In study two, the ability of 10 general education teachers to develop graphic comparison organizers and to implement the instructional routine in their secondary science and social studies classrooms was determined. Descriptive data regarding the types and numbers of concepts teachers selected for comparisons before and after the learning the instructional routine were also collected.

Study one took place in classrooms in one high school with a student population of approximately 1,650 students and two middle schools with student populations of

approximately 950 and 700, respectively in the same Midwestern suburban school district in eastern Kansas (Bulgren et al., 2002). The study included 107 total students who voluntarily participated. Student participants were enrolled in seventh through twelfth grade science classes. Students were randomly assigned to participate in either an experimental or a control group by their teachers. Subgroups within each class included high achieving (HA), normal achieving (NA), low achieving (LA), and learning disabled (LD). The experimental group included 55 students and the control group included 52 students. Participating teachers had identical scripts concerning the content presented. The only difference was the manner in which the similarities and differences of the content was presented. The teacher assigned to the control group utilized the traditional style lecture-discussion format. The teacher assigned to the experimental group utilized the Concept Comparison Routine (comparison table, linking steps, and cue-do-review sequence) to present the similarities and differences within the content. The measurement system used was a test that consisted of both recall of information and recognition of information. A multivariate analysis of variance was conducted with two between subjects factors and three outcome variables. The between subjects factors were student type (HA, NA, LA, LD) and experimental condition (control and experimental). The three outcome variables were the three scores: the Recall Score, the Complete Set Score, and the Recognition Score.

The primary focus of this research was the effect of the teaching method; follow-up analyses concentrated on the effects of the teaching method for the different outcome measures and within the different student types (Bulgren et al., 2002). For each of the three outcome measures, significant differences were found between the experimental

and control groups. Additional follow-up analyses of experimental versus control group were conducted within each student type. The multivariate analysis using all three scores revealed that the experimental students with LD performed significantly better than the control students with LD performed. For the LA students, the multivariate analysis using all three scores was not statistically significant. The very large effect size indicated that the lack of a statistically significant difference was likely due to low power, which was probably a consequence of having only 6 LA students in the experimental group and only 10 LA students in the control group. In addition, no statistically significant difference existed between the Recognition Scores earned by the NA experimental group and the NA control group. In addition, no statistically significant differences existed between the HA experimental and control groups on any of the three outcomes. Further analysis was done to determine levels of students' performance on the tests judged by standards that were often applied to content test performance in secondary general education classes. Results were analyzed to determine the percentage of students who would have performed at a level generally deemed as passing (i.e. earning a score of 60% or above). Total Scores represented passing grades for the following percentage of students: for students with LD, 29.41% in the control group and 70.76% in the experimental group; for LS students, 50.00% in the control group and 83.33% in the experimental group; for the NA students, 87.50% in the control group and 94.12% in the experimental group.

Once researchers ascertained that the use of the Concept Comparison Table and Routine could produce significantly better results compared with a traditional lecture-discussion format in a controlled situation, the next step was to explore whether teachers of inclusive general education classes could incorporate the researched technique into

regular classroom practice (Bulgren et al., 2002). Therefore, study two was conducted to determine the effects of training in the routine on teacher use. Study two explored (a) teacher response to a professional development session related to the Concept Comparison Table and Routine in terms of the instruction they delivered in their classes, (b) the numbers and types of conceptual information sets that were selected for comparison by the teachers before and after they were introduced to the Concept Comparison Table and Concept Comparison Routine, and (c) teacher and student satisfaction with the use of the routine. The participants for study two taught in two school districts located in suburban areas of eastern Kansas. Ten general education secondary content teachers who taught inclusive classes volunteered to participate in the study after being approached individually. A measurement system in the form of a checklist was used to assess the level of teacher performance in implementing the Concept Comparison Routine in the classroom. The checklist contained items designed to reflect the parts of the Concept Comparison Routine. Baseline data were gathered prior to teachers learning the Concept Comparison Routine. Next, teachers received instruction in the Concept Comparison Routine in a two-hour professional development session and were given a guidebook for reference during and after the professional learning opportunity. After learning the routine, teachers began deciding when to use the routine and with what concepts. Teacher participants had access to professional developers during their planning phase.

Once teachers decided when they were going to be using the routine within their classrooms, they informed the researchers of what days they would be implementing the routine (Bulgren et al., 2002). On the day of implementation, outside observers attended

the class and utilized the measurement checklist for the research project. In addition, teachers and students completed a satisfaction survey at the end of the school year. Researchers used a multiple-probe across-subjects design, a variation of the multiple-baseline design. After training, the teachers reached or exceeded an 85% mastery level in 38 out of the 39 classes observed. On average, the results of the teacher satisfaction survey indicated that the teachers were satisfied with many aspects of the program. In addition, on average, the 198 student survey results indicated that they were neither satisfied nor dissatisfied with many aspects of the Concept Comparison Routine.

Bulgren, Deshler, Schumaker, and Lenz (2000) conducted the analogical instruction in secondary content classrooms studies. The purpose of these studies was to explore the use of analogies while teaching important concepts in secondary content classrooms containing students of diverse abilities. A combination of quantitative, qualitative, single-subject, and large-group methodologies was selected to provide information about analogies as an instructional technique.

Study one in this series of studies was conducted to determine the effects of an analogically based instructional routine called the Concept Anchoring Routine on students' knowledge of concepts (Bulgren et al., 2000) . Eighty-three students were recruited from the general education classes of three teachers in three high schools in a Midwestern United States suburban school district. All participating students were enrolled in a course titled Introduction to Investigative Science Skills. The study took place in three typical general education classrooms. Two teachers taught the course in two classes each; the third teacher taught the course in four science classes. The eight classes were randomly assigned to one of the two experimental conditions, hereafter

referred to as Condition 1 and Condition 2. The study took place during regularly scheduled classes. For the selection process, students volunteered to allow their data to be used in this study by returning consent forms signed by their parents. Although all students in the classrooms received the instruction, only 39 students who participated in Condition 1 and 44 students who participated in Condition 2 had permission for their data to be used. A 32-item multiple-choice test was used to measure recognition of facts and understanding of four concepts that were included in the lesson. In this study, the use of the Concept Anchoring Routine to teach difficult concepts resulted in significantly better student performance on tests.

Study two was conducted to determine the effects of training on teachers' use of the analogically based routines in the classes of 10 secondary science and social studies teachers (Bulgren et al., 2000). This study was conducted as a logical step in determining whether the procedures validated in a controlled setting could be integrated into regular content instruction by a variety of teachers and whether teachers and students would be satisfied with the routine. Ten secondary content teachers who taught in two school districts located in suburban areas of eastern Kansas volunteered to participate in the this study. They received \$80 each for their participation, and the study lasted approximately eight months. Each teacher targeted one class of students for participation. The 10-targeted classes included 193 students who supplied satisfaction data regarding the instructional methods used by the teachers. The study took place during regularly scheduled class periods that ranged from 45 to 55 minutes in length. A 12-point checklist, known as the Implementation Checklist, was used to assess teacher implementation of the Concept Anchoring Routine in their classrooms. Next to each item on the checklist was a

space where an observer could record points earned by the teacher for completing the corresponding step of the routine. The Teacher and Student Satisfaction Questionnaire contained 20 items and was constructed as a 7-point Likert-type scale ranging from 1 (completely satisfied) to 7 (completely dissatisfied) or from 1 (very likely) to 7 (very unlikely). Teachers participating in the study received instruction in the Concept Anchoring Routine and Anchoring Table in a two-hour workshop presented by two of the researchers. In addition, the teachers were given a reference resource in the form of a guidebook. After the two-hour workshop, teachers went back to their classrooms and implemented the routine as often as they wished. They were asked to choose at least two concepts that they wanted students to learn, to prepare a draft of the Concept Anchoring Table for each concept, and to use the Concept Anchoring Routine to co-construct a final version of the Concept Anchoring Table with students in the classroom.

Researchers consulted with teachers as they planned their Concept Anchoring Tables and their presentations of the Concept Anchoring Routine (Bulgren et al., 2000). A multiple-baseline across-teachers design was used with two teachers to determine the effects of the workshop instruction on teacher behavior in the classroom. Next, teachers were taught how to implement the routine in the classroom. When teachers decided on a time to use the routine, they would contact the outside observers to conduct a classroom visit using the Implementation Checklist. In addition, satisfaction questionnaires were administered to the teachers and the students at the end of the year. Study outcomes indicated that teachers quickly co-constructed the Concept Anchoring Table with a high level of fidelity. In general, the teachers were satisfied with the routine. They indicated that they would continue to use it and would recommend it to others. The students were

less satisfied than their teachers were, but with one exception, their mean scores on the items did not fall in the dissatisfied-range. A wide variation in student satisfaction existed for different classes. This variation indicated that the teachers might have presented the routine in different ways or with different levels of enthusiasm. Another possibility for the discrepancy in student satisfaction was that the students might not have been benefiting from the use of the routine in terms of improved performance when it was used in actual classrooms with actual course content.

Study three was conducted in an intact secondary classroom setting to determine student knowledge of important science concepts that the teacher taught with and without the use of Concept Anchoring Routine (Bulgren et al., 2000). One of the 10 teachers who participated in study two (Teacher 8) also participated in study three. She taught seventh-grade general education life science classes that contained a diversity of students and used the Concept Comparison Table and Routine in her classes. Eighteen students in one of her classes participated in both study two and three. The setting was the teacher's regularly assigned classroom, and student outcomes were measured using four parallel, equivalent forms of a nine-item test designed to measure student recall of information related to four targeted concepts. An ABAB reversal experimental design was used in this study. The first and third concepts were taught using the Concept Comparison Table and Routine. The second and fourth concepts were taught using the traditional lecture-discussion format. The teacher administered the test on the day following the introduction of each concept. For each of the concepts taught, the mean percentage of points earned on the test by the class was used to assess student understanding and memory of information related to that concept. The students' mean test performance on the two enhanced

concepts was compared with their mean test performance on the two non-enhanced concepts using *t* tests. A significant difference existed in favor of the concepts associated with the routine.

The overall outcomes of these three studies indicated that teacher use of the routine led to increased student retention and expression of information (Bulgren et al., 2000). In addition, teachers easily learned the routine and used considerably more analogies to instruct concepts after they became familiar with the routine. Teachers indicated that they were satisfied with the routine; students were less satisfied with the routine than were the teachers.

Conclusion

As revealed through the literature review, it is imperative to address the history of reading school improvement. Based on the past actions taken to improve adolescent literacy, educators must determine what works and what does not work both teachers and students in the classroom. For teachers to address the learning needs of adolescents, appropriate professional development that is focused on student outcomes is necessary. High quality professional development that is ongoing, provides ample support for teachers, and is focused on student outcomes appears to be where the greatest results are being achieved. This approach will require a different professional development planning process for district and building administrators. An intentional method of starting with the end in mind (student outcomes) is required to strategically plan on a method of attaining the desired results. Districts must first respond to the following questions. What are the instructional practices needed by teachers to achieve these desired outcomes? Who needs professional development and in what instructional practices? What teacher

support needs to be offered? Who needs to offer this support? Who needs to pay for these services? Many questions such as these are necessary to hit the target of increased student achievement. Change is not an isolated event, but change is a series of stages that requires time (Valencia & Killion, 1988). Fullan (1991) noted that the process of educational change is lengthy and may take years from goal-setting to stable establishment.

CHAPTER III

METHODOLOGY

The review of literature revealed evidence that when classroom teachers implemented CERs with fidelity, a positive impact on literacy achievement of adolescents in those classrooms resulted in some cases (Bulgren et al., 2000, Bulgren et al., 2002). Bulgren et al. (2000) summed up the findings in at least three ways. First, under certain conditions, the professional development opportunities and support provided after the fidelity checks can have an influence on the level of implementation by teachers and can affect the literacy achievement of students. Second, they indicated that teacher satisfaction was just as important to explore as the impact of CERs on literacy achievement of students. Third, the overall outcomes of three CER studies indicated that teacher use of the routines led to increased student retention and expression of information that affected overall literacy achievement.

This study compared classes whose teachers utilized the CERs and classes whose teachers did not utilize the routines on literacy achievement for sixth, seventh, and eighth grade students in three regions of Arkansas. The study also explored how teachers involved in the training of CERs felt about using the routines in their classrooms. The hypotheses and research question for this study were as follows:

1. No significant difference will exist by gender between sixth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement

Routines and those whose teachers did not utilize the Routines on literacy achievement.

2. No significant difference will exist by gender between seventh grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement.
3. No significant difference will exist by gender between eighth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement.
4. How do teachers trained in Content Enhancement Routines in three regions of Arkansas feel about using the routines in their classrooms and feel about the professional development process of the Strategic Instruction Model?

The six goals of this chapter were to (a) explain the research design of this study, (b) describe the subjects and explain the sample selection, (c) explain the instrumentation, (d) outline the data collection process, (e) provide details of the analytical methods utilized, and (f) identify the limitations of the study.

Research Design

A quantitative, casual comparative strategy was conducted in this study. Johnson and Christensen (2008) define a casual comparative study as research that compares two or more categorical, independent variables and one or more quantitative dependent variables. This non-experimental, research study utilized conditions that already existed in the schools; therefore, the independent variables in hypotheses one through three were

not manipulated. A posttest only strategy was used to compare the effects of classes whose teachers utilized the CERs versus classes whose teachers did not utilize the routines on literacy achievement for sixth, seventh, and eighth grade students in three regions of Arkansas. This study also examined gender's role (a second independent variable) in influencing literacy achievement. The combination of teaching strategy and gender created a 2 x 2 factorial design for the first three hypotheses. In addition, the dependent variable for the fourth hypothesis was the measured attitudes toward the CER professional development process. The participants for the hypotheses were the students in the three regions of Arkansas who had experienced or had not experienced the CER instruction, and the participants for the research question were the teachers who had received professional development in the CER procedures. The CER Teacher Outcomes Questionnaire was utilized to measure how teachers involved in the training of CERs through the AALI felt about using the routines in their classrooms and how effective they felt the professional development process was.

Sample

Student Participants for the Hypotheses

For the three hypotheses of this study, 2009-2010 sixth, seventh, and eighth grade students constituted the sample group for hypotheses one through three, respectively. However, to begin the process of selecting students in the condition group, all the teachers in Arkansas who had been trained in using CERs were identified. In observing the regional demographics of the teachers, the training had taken place predominantly in three main regions of Arkansas, which included the northeast, the central, and the southern regions. Of the school districts that trained their teachers, one district from each

of the three different regions was randomly selected, and all the teachers in the district who taught sixth, seventh, or eighth grade were identified. Of all the teachers in each district representing the three regions, at least two teachers were randomly selected from each region. Each teacher represented 17 to 28 students in their first academic period classes. Then, all the students from the selected teachers' first academic period classes of the three regions were divided into two groups, males and females, for each of the three grade levels. Next, with only two exceptions, 20 male and 20 female CER students were randomly selected from each region and from each grade level to participate in the study. Thus, the three CER condition grade level groups (sixth, seventh, and eighth grade groups) consisted of 60 males and 60 females who attended one of the three regional school districts during the 2009-2010 school year.

This stratified random selection process was conducted to increase the validity of the study's findings by providing a broader population from which to choose participants (Johnson & Christensen, 2008). This technique allowed the researcher to divide the population into mutually exclusive groups (the three regions and the two sexes), and then to use a simple random sampling process to construct the groups.

The control group consisted of 2009-2010 sixth, seventh, and eighth graders representing three similar school districts from the same three regions of Arkansas who had been taught by teachers who had not been trained in using CERs. The control school districts were matched with the CER districts according to grade levels served, geographical diversity, type of curriculum offered, and free and reduced lunch status. After the three matching districts representing the three regions of Arkansas were identified, the same process was used as the condition group with male and female

students being randomly drawn. Table 1 shows the demographic breakdown for the students in this study.

Table 1

Student Sample with Grade and Region by Condition and Gender

	CER Instruction			Non-CER Instruction		
	Females	Males	<i>N</i>	Females	Males	<i>N</i>
<u>Sixth Grade</u>						
Northeast	20	20	40	17	20	37
Central	20	20	40	20	20	40
Southeast	20	20	40	20	20	40
Totals	60	60	120	57	60	117
<u>Seventh Grade</u>						
Northeast	20	20	40	20	20	40
Central	20	20	40	20	20	40
Southeast	20	20	40	20	20	40
Totals	60	60	120	57	60	120
<u>Eighth Grade</u>						
Northeast	20	20	40	20	20	40
Central	20	20	40	20	20	40
Southeast	20	20	40	20	18	38
Totals	60	60	120	60	58	118

Note. CER = Content Enhancement Routine instruction group, Non-CER = traditional instruction group.

Teacher Participants for the Research Question

To address the research question in this study, the researcher elicited responses from members of the AALI at each participating school site that participated in the training. Responses were ascertained through survey administration regarding their perceptions and experiences concerning the CER instructional process and professional learning opportunity. The participants considered for this study had been involved in the AALI for at least one year. All participants considered were present educators in Arkansas schools teaching from grades 4-12. The participants varied in gender, age, years of teaching experience, content taught, and grades taught. The geographical diversity of the schools represented the northeast, the central, and the southern portions of the state. The population of participants was overwhelmingly female, with a wide range of years of teaching experience (2-39 years). Participation in the state intervention was optional for some members but was required for others; however, participation was voluntary for this study. In the training exercises, each participant learned a different number of routines because a differentiated professional development plan was created for each participating school. Further, in the CER instructional process, each participant received professional development in a minimum of two routines, received two coaching visits, and received two fidelity checks per school year. After the training from the AALI, the teachers exposed their students to at least two CERs in their classrooms. Table 2 shows the demographic breakdown for the CER teachers in this study.

Table 2

CER Teacher Sample with Region by Gender and Years Experience

Region	N	CER Teacher Participants		
		Females	Males	Years Experience
Northeast	5	5	0	2-25
Central	18	11	7	5-33
Southeast	18	15	3	2-39

Instrumentation**Augmented Benchmark Exam Grades 3-8**

The ACTAAP Augmented Benchmark Test scale scores (Arkansas Department of Education, 2009b) were used to measure the literacy achievement for the three hypotheses in the study. The Augmented Benchmark Exam for grades three through eight is considered an augmented test because it consists of two testing components: criterion-referenced testing and norm-referenced testing. The criterion referenced testing portion was utilized for this study. This portion of the exam was implemented as part of ACTAAP (2009) in response to ACT 35, which requires the State Board of Education for Arkansas to develop a comprehensive testing program that includes assessment of the challenging academic content standards defined by the Arkansas Curriculum Frameworks. The literacy portion of the exam consists of a reading and a writing section, and these sections are scored with equal value. The reading portion measures students' understanding of three types of text: literary, content, and practical. Students are asked to answer multiple-choice questions and to respond in writing to one open-ended question per type of text. In addition, they are assessed on their writing skills (content, style,

sentence formation, usage, and mechanics). This portion of the exam contains multiple-choice questions and writing prompts.

The Arkansas Department of Education (2009a) defines the student levels of achievement on these exams as follows:

- **Advanced:** Students demonstrate superior performance well beyond proficient grade-level performance. They can apply established reading, writing, and mathematics skills to solve complex problems and complete demanding tasks on their own. They can make insightful connections between abstract and concrete ideas and provide well-supported explanations and arguments.
- **Proficient:** Students demonstrate solid academic performance for the grade tested and are well prepared for the next level of schooling. They can use established reading, writing, and mathematics skills and knowledge to solve problems and complete tasks on their own. Students can tie ideas together and explain the ways their ideas are connected.
- **Basic:** Students show substantial skills in reading, writing, and mathematics; however, they only partially demonstrate the abilities to apply these skills.
- **Below Basic:** Students fail to show sufficient mastering of skills in reading, writing, and mathematics to attain the basic level. (para. 15)

The Arkansas Department of Education (2008) reports that the Arkansas Augmented Benchmark Exams are both reliable and valid. In addition, they report the exams have “technically sound levels of reliability, validity, and fairness, based on the extensive research that underlies both the CRT and NRT item sets” (p. 6). Further, reliability information was not authorized for release to the public.

CER Teacher Outcomes Questionnaire

The CER Teacher Outcomes Questionnaire was used to address the research question of the study and measured how teachers trained in CERs in Arkansas feel about the professional development process of the Strategic Instruction Model. The questionnaire includes 13 items using a 7-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree.” A mean rating was calculated for each group on each item. K. Dielmann (personal communication, May 6, 2010), external evaluator for the AALI, created the CER survey in 2006 for evaluating the AALI Project. The survey was given to the first group of participants in the project purely for gathering qualitative feedback regarding the project and the applicability of the survey to improve the instrument’s validity. After modifications were made, based on the qualitative feedback from the participants, Dielmann gathered data for reliability purposes. According to K. Dielmann (personal communication, January 20, 2011), the survey has been found to be both valid and reliable using Cronbach's alpha scores from 33 participants. The internal consistency of the scale was high (Cronbach's $\alpha = 0.944$). Deletion on any of the items did not improve the value.

Data Collection Procedures

Following IRB approval (see appendix A), the researcher gathered 2010 Arkansas Benchmark Literacy data of sixth, seventh, and eighth graders identified to participate in the study. To ensure confidentiality and security of student and teacher identity, each student received an eight-digit code. The first two digits identified the student, the third identified the gender, the fourth identified the student’s 2009-2010 grade level, the fifth and sixth digit identified the region, the seventh identified each participant’s 2009-2010

first academic period teachers, and the last number was randomly selected. School district administration approved the release of this student data to the researcher and assigned school personnel to collect and provide this information plus the sixth, seventh, and eighth grade student literacy proficiency scores. In addition, assigned school personnel provided the researcher with participant completed hard copies of the CER Teacher Outcomes Questionnaire to be analyzed by the researcher. The researcher stored both the student data and CER Teacher Outcomes Questionnaires in a secure location to ensure confidentiality and security of all data provided.

After gathering demographic data from all AALI participating teachers and students, they were matched with teachers and students from schools with similar grade levels, geographical diversity, type of curriculum received, student grouping, and free and reduced lunch status. Teachers from each grade-level and school were randomly chosen to participate in the study. Following the identification of the participating teachers from each grade-level representing each school, participating students were identified. These students represented the teachers' first academic periods from the 2009-2010 academic year. By the end of this process, two sets of approximately 120 students from each grade-level participating existed. Due to differing number of student populations, two schools were unable to report a total of 20 students for two groups.

Analytical Methods

IBM Statistical Packages for the Social Sciences (SPSS) Version 19 was utilized for data analysis. Data collected for the first three hypotheses were coded according to teacher, student, gender, and region. The following codes were used for each grade-level: teacher (1 = participated, 2 = did not participate), student (1 = participated, 2 = did not

participate), gender (1 = male, 2 = female), and region (1= South, 2 = Central, 3 = Northeast). Next, the three hypotheses were analyzed using the following statistical analysis.

To address the first hypothesis, a 2 x 2 factorial analysis of variance (ANOVA) was conducted using condition (CER instruction versus traditional strategies instruction) by gender (male versus female) as the independent variables and the overall literacy achievement measured by the ACTAAP Augmented Benchmark Test as the dependent variable for the sixth graders. The second hypothesis was analyzed by a 2 x 2 factorial ANOVA with condition (CER instruction versus traditional strategies instruction) by gender (male versus female) as the factors and the overall literacy achievement measured by the ACTAAP Augmented Benchmark Test as the dependent variable for the seventh graders. Hypothesis number three was examined by a 2 x 2 factorial ANOVA using condition (CER instruction versus traditional strategies instruction) by gender (male versus female) as the independent variables and the overall literacy achievement measured by the ACTAAP Augmented Benchmark Test as the dependent variable for the eighth graders. To test the three null hypotheses, the researcher used a two-tailed test with a .05 level of significance.

Finally, the researcher gathered descriptive data from all CER teachers at the three regions identified who completed the 13-question survey for the study. Teachers completed the survey anonymously at the different school sites regarding attitudes toward the CERs training professional development process through the Strategic Instruction Model in Arkansas. A contact person at each school site gathered the surveys and mailed

them to the researcher. The data were analyzed using descriptive statistics, and tables were constructed.

Limitations

In all studies, limitations need to be noted to help the reader determine how to interpret the results of the studies. Some limitations adversely affect a study's generalizability, and some limitations do not. The following limitations were associated with this study.

First, professional development in the CER model is relatively new at this point in Arkansas, and therefore, few school districts were available for inclusion in the study. During the 2006-2007 academic year, the AALI professional learning opportunity became available to all school districts statewide. The schools were chosen from mainly three regions of Arkansas; this limited the population size from which to draw the sample. The participating schools in the study had been involved in the intervention for a different number of years. One of the participating schools had been involved in the intervention for one year and the other two for four years each. Due to the difference in years of participation and student and teacher needs at each site, there was variance in the kind and number of CERs learned that could have influenced the attitudes teachers had about the routines. In addition, some of the teacher participants involved in the CER training process chose to participate, and administrators required registration for others, which could also affect levels of implementation and attitude about the routines. For training to take place, each site was encouraged to involve, at a minimum, a department of teachers or a grade-level of core classroom teachers.

Another limitation involved administrative changes that took place in two of the schools where CERs were being learned and implemented. At one school site, a new principal was hired from outside of the school site and had no prior knowledge of AALI. At the other site, the assistant principal was hired as the principal. He had been intimately involved in the learning and implementation of CERs. This factor could have influenced the level of learning of the CERs by students and could have affected how teachers felt about the CER process.

Third, participating teachers and administrators were encouraged to embed the methodologies utilized through the AALI with existing strategies and tools that were working for both teachers and students. Due to instructional strategies other than the CERs being utilized by participating teachers, this could have threatened internal validity. This is known as ambiguous temporal precedence because other variables might influence student achievement on the Literacy Benchmark Exam.

Fourth, the research design for this study was non-experimental, which constitutes a limitation in itself. The researcher was unable to manipulate the independent variables or randomly assign participants, which produced less conclusive evidence. However, this and the other limitations did not seem to exceed the typical circumstances that are encountered in using schools for research purposes.

CHAPTER IV

RESULTS

The purpose of this quantitative research study was to determine the effects of CERs by gender on literacy achievement of schools in three regions of Arkansas. The independent variables were type of instruction (CER versus traditional) and gender (female versus male). The dependent variable was literacy achievement measured by scale scores from the 2010 Arkansas Augmented Benchmark Examination. Using SPSS, a Factorial Analysis of Variance (ANOVA) was run to look at each of the three null hypotheses. Prior to running the statistical analysis, assumptions of normality and homogeneity of variances were checked. In addition, descriptive statistics were utilized to examine the research question. The results of this analysis are found in this chapter.

Demographics

For this study, 12 schools from six school districts representing the southeast, central, and northeast regions of Arkansas were used. Each school consisted of grade configurations that included grades 6, 7, and/or 8 with enrollment ranging from 133 to 1,159 students. The student free and reduced lunch status for these schools ranged from 28% to 100%. Their adequate yearly progress status ranged from achieving standards to targeted intensive-year 3. The teachers involved in this study varied in years of experience (2-39). In addition, these teachers taught a general education curriculum

(math, science, literacy, and social studies) in a general education setting, and all of their classes consisted of heterogeneous grouping of students.

Hypothesis 1

Hypothesis 1 stated that no significant difference will exist by gender between sixth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement. The population from which this sample was selected was normally distributed. A few extreme outliers were observed and deleted from the data set prior to analysis (See Appendix A for comparison of the group distributions). Data for sample groups were normally distributed. Table 3 displays the group means and standard deviations.

Table 3

Descriptive Statistics from Sixth Grade 2010 Arkansas Augmented Benchmark Examination Literacy Scale Scores

Group	<i>M</i>	<i>SD</i>
Female Traditional	812.86	115.447
Female Content Enhancement Routines	794.93	148.398
Male Traditional	715.98	161.473
Male Content Enhancement Routines	745.95	118.809

Levene’s test of equality of variances was conducted within ANOVA and indicated homogeneity of variance across groups, $F(3, 230) = .604, p = .613$. A line plot indicated a slight interaction between gender and type of instruction, but the interaction was not statistically significant (See Appendix B).

To test this hypothesis, a 2 x 2 Factorial ANOVA was conducted to evaluate the effects of classroom instruction (CER versus traditional) by gender (female versus male) on literacy achievement as measured by the 2010 Arkansas Augmented Benchmark Examination. The results of the ANOVA are displayed in Table 4.

Table 4

Factorial ANOVA Results from Sixth Grade 2010 Arkansas Augmented Benchmark Examination Literacy Scale Scores

Source	SS	df	MS	F	p	ES
Gender	291452.495	1	291452.495	17.955*	.000	.072
Instruction	795.042	1	795.042	.049	.825	.000
Gender*Instruction	8451.016	1	8451.016	.521	.471	.002
Error	3733421.060	230	16232.265			

Note: * The mean difference is significant at the .01 level.

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 233) = 1.791, p = .182, ES = .008$. Given there was no significant interaction between the variables of type of instruction and gender, the main effect of each variable was examined separately. The main effect for gender was significant but had a small effect size, $F(1, 230) = 17.955, p < .001, ES = .072$. The main effect for instruction was not significant, $F(1, 230) = .049, p = .825, ES = .000$.

Hypothesis 2

Hypothesis 2 stated that no significant difference will exist by gender between seventh grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy

achievement. The population from which this sample was selected was normally distributed. A few extreme outliers were observed and deleted from the data set prior to analysis (See Appendix C for comparison of the group distributions). Group means and standard deviation are displayed in Table 5.

Table 5

Descriptive Statistics from Seventh Grade 2010 Arkansas Augmented Benchmark Examination Literacy Scale Scores

Group	<i>M</i>	<i>SD</i>
Female Traditional	806.90	145.357
Female Content Enhancement Routines	762.00	114.164
Male Traditional	697.76	146.731
Male Content Enhancement Routines	708.25	145.847

Levene’s test of equality of variances was conducted within ANOVA and indicated homogeneity of variance across groups, $F(3, 234) = 2.31, p = .077$. A line plot indicated a slight interaction between gender and type of instruction, but the interaction was not statistically significant (See Appendix D).

To test this hypothesis, a 2 x 2 Factorial ANOVA was conducted to evaluate the effects of classroom instruction (CER versus traditional) by gender (female versus male) on literacy achievement as measured by the 2010 Arkansas Augmented Benchmark Examination. The results of the ANOVA are displayed in Table 6.

Table 6

Factorial ANOVA Results from Seventh Grade 2010 Arkansas Augmented Benchmark Examination Literacy Scale Scores

Source	SS	df	MS	F	p	ES
Gender	394631.413	1	394631.413	20.529*	.000	.081
Instruction	17612.513	1	17612.513	.916	.339	.004
Gender*Instruction	45626.791	1	45626.791	2.374	.125	.010
Error	4498183.318	234	19223.006			

Note: * The mean difference is significant at the .01 level.

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 234) = 2.374, p = .125, ES = .010$. Given there was no significant interaction between the variables of gender and type of instruction, the main effect of each variable was examined separately. The main effect for gender was significant, $F(1, 234) = 20.529, p < .001, ES = .081$ but had a small effect size. The main effect for instruction was not significant, $F(1, 234) = .916, p = .339, ES = .004$.

Hypothesis 3

Hypothesis 3 stated that no significant difference will exist by gender between eighth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement. The population from which this sample was selected was normally distributed. A few extreme outliers were observed and deleted from the data set prior to analysis (See Appendix E for comparison of the group distributions). Group means and standard deviation are displayed in Table 7.

Table 7

Descriptive Statistics from Eighth Grade 2010 Arkansas Augmented Benchmark Examination Literacy Scale Scores

Group	<i>M</i>	<i>SD</i>
Female Traditional	847.75	125.280
Female Content Enhancement Routines	843.51	111.20
Male Traditional	792.26	138.101
Male Content Enhancement Routines	780.00	149.789

Levene’s test of equality of variances was conducted within ANOVA and indicated homogeneity of variance across groups, $F(3, 233) = 1.05, p = .373$. A line plot indicated no interaction between gender and type of instruction (See Appendix F).

To test this hypothesis, a 2 x 2 Factorial ANOVA was conducted to evaluate the effects of classroom instruction (CER versus traditional) by gender (female versus male) on literacy achievement as measured by the 2010 Arkansas Augmented Benchmark Exam. The results of the ANOVA are displayed in Table 8.

Table 8

Factorial ANOVA for 2010 Arkansas Augmented Benchmark Examination Literacy Scale Scores Eighth Grade

Source	SS	df	MS	F	p	ES
Gender	209717.930	1	209717.930	12.053*	.001	.049
Instruction	4031.979	1	4031.979	.232	.631	.001
Gender*Instruction	951.868	1	951.868	.055	.815	.000
Error	4054125.116	233	17399.679			

Note: * The mean difference is significant at the .01 level.

Insufficient evidence existed based on the interaction of the variables to reject the null hypothesis, $F(1, 233) = .055, p = .815, ES < .001$. Given there was no significant interaction between the variables of type of instruction and gender, the main effect of each variable was examined separately. The main effect for gender was significant, $F(1, 233) = 12.053, p = .001, ES = .049$ but had a small effect size. The main effect for instruction was not significant, $F(1, 233) = .232, p = .631, ES = .001$.

Research Question

The research question addressed the following issue: *How do teachers trained in Content Enhancement Routines in three regions of Arkansas feel about using the routines in their classrooms and feel about the professional development process of the Strategic Instruction Model?* Of the surveys distributed, 41 of the 55 (75%) of the CER teachers completed the survey. The CER Teacher Outcomes Questionnaire was used to address the research question of the study and included 13 items using a 7-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree.” The survey was analyzed based on four main categories:

- CER Teacher Perceptions of How Students Viewed the Routines
- CER Teacher Perceptions of How Routines Impacted Academic Performance
- CER Teacher Perceptions of How Routines Impacted Instructional Practices
- CER Teacher Perceptions of How School Culture Impacted Routine Use

By using descriptive statistics, frequencies for each of the four main categories of survey statement responses were discussed.

CER Teacher Perceptions of How Students Viewed the Routines

On the CER Teacher Outcomes Questionnaire, statements 1, 2, 3, and 4 focused on teacher perceptions of how their students viewed the CERs. From the teachers' perspectives, they agreed (64%) that their students were using the routines on a regular basis and liked using them. In addition, they expressed they were receiving positive feedback from students regarding the use of the routines. They also indicated their students found the routines easy to use. Table 9 presents each item's responses.

Table 9

Item Responses for Statements 1, 2, 3, and 4 on the CER Teacher Outcomes Questionnaire

Rating	<i>Strongly Disagree</i>				<i>Strongly Agree</i>		
	1	2	3	4	5	6	7
<i>Item 1: I like using the Content Enhancement Routines.</i>							
<i>N</i>	0	2	7	6	11	5	10
<i>%</i>	0	4.87	17.07	14.63	26.82	12.19	24.39
<i>Item 2: I use the Content Enhancement Routines often.</i>							
<i>N</i>	1	1	6	10	6	12	5
<i>%</i>	2.44	2.44	14.63	24.39	14.63	29.26	12.19
<i>Item 3: My students find the Content Enhancement Routines easy to use.</i>							
<i>N</i>	0	0	1	8	11	13	8
<i>%</i>	0	0	2.44	19.51	26.82	31.70	19.51
<i>Item 4: I am receiving positive feedback from students regarding the Content Enhancement Routines.</i>							
<i>N</i>	1	1	6	9	8	11	5
<i>%</i>	2.44	2.44	14.63	21.95	19.51	26.82	12.19

Items 1, 2, 3, and 4 were combined to create a group percentage for this category. Figure 4 represents the group percentages of the responses from statements 1, 2, 3, and 4.

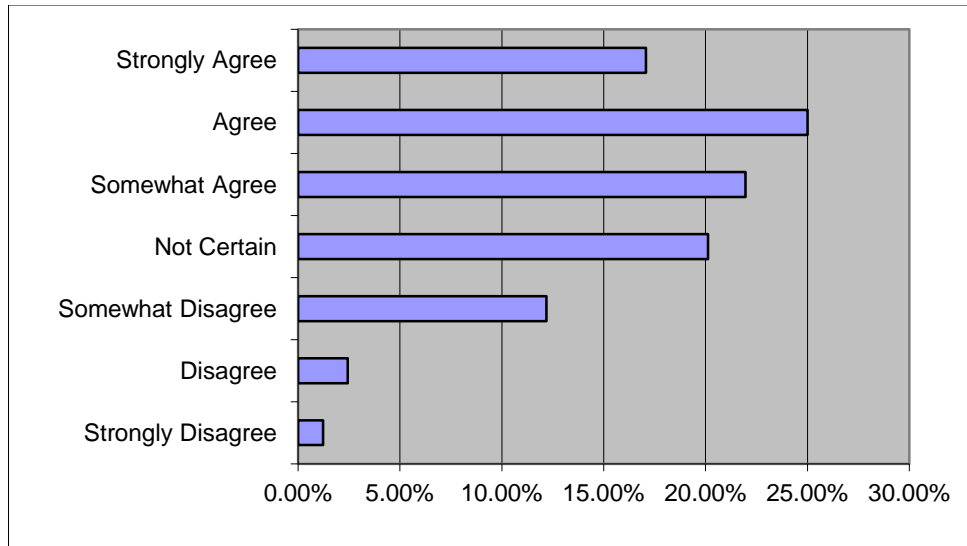


Figure 4. Group responses for statements 1, 2, 3, and 4 on the CER Teacher Outcomes Questionnaire for the CER Teacher Perceptions of How Students Viewed the Routines category. Numbers represent group percentages.

CER Teacher Perceptions of How Routines Impacted Academic Performance

On the CER Teachers Outcome Survey, statements 5, 6, 7, and 11 focused on teachers' perceptions of how the routines affected their students' academic performance. Teachers reports a 75% agreement that their students had benefited from using the routines. In addition, they agreed they had seen improvement in overall student performance since implementing the routines. Teachers expressed that struggling learners who were exposed to the routines seemed to have benefited from the use of them. Table 10 presents each item's responses.

Table 10

Item Responses for Statements 5, 6, 7, and 11 on the CER Teacher Outcomes Questionnaire

Rating	<i>Strongly Disagree</i>				<i>Strongly Agree</i>		
	1	2	3	4	5	6	7
Item 5: I have seen improvements in overall student performance since implementing Content Enhancement Routines.							
<i>N</i>	1	2	3	7	12	6	10
%	2.44	4.87	7.32	17.07	29.26	14.63	24.39
Item 6: I have seen gains in academic performance in students who were struggling prior to my Content Enhancement Routines training.							
<i>N</i>	1	3	3	5	11	8	10
%	2.44	7.32	7.32	12.19	26.82	19.51	24.39
Item 7: My students have benefited from the Content Enhancement Routines.							
<i>N</i>	0	0	3	5	10	7	16
%	0	0	7.32	12.19	24.39	17.07	39.02
Item 11: I use the Content Enhancement Routines because I can see a change in the students' performance as a result of them.							
<i>N</i>	1	4	1	6	10	9	10
%	2.44	9.76	2.44	14.63	24.39	21.95	24.39

Items 5, 6, 7, and 11 were combined to create a group percentage for this category. Figure 5 represents the group percentages of the responses from statements 5, 6, 7, and 11.

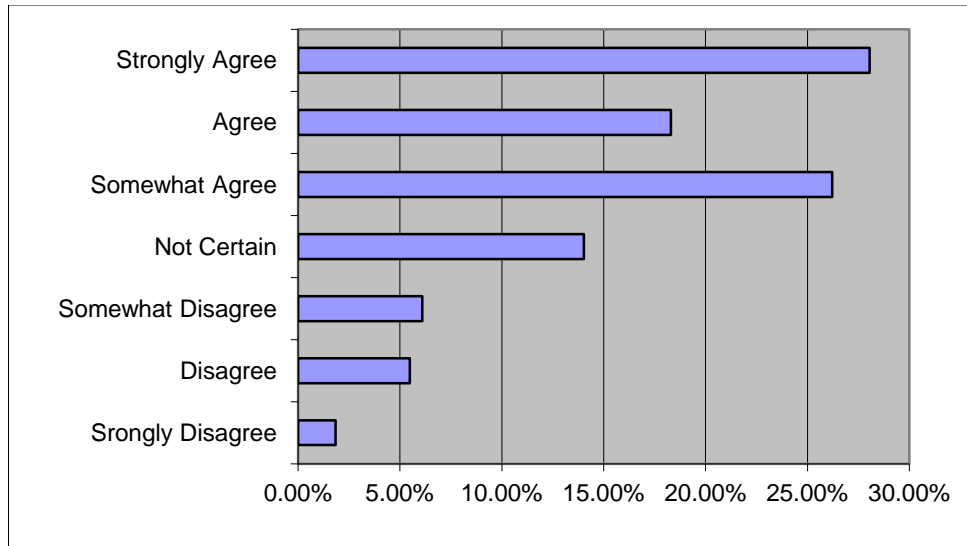


Figure 5. Group responses for statements 5, 6, 7, and 11 on the CER Teacher Outcomes Questionnaire for the CER Teacher Perceptions of How Routines Impacted Academic Performance category. Numbers represent group percentages.

CER Teacher Perceptions of How Routines Impacted Instructional Practices

On the CER Teachers Outcome Survey, statements 8 and 9 focused on teachers' perceptions of how the routines influenced their instructional practices. Teachers reported 68% agreement that the routines had affected their instructional practices since their implementation. They agreed their content knowledge had changed due to their learning and use of the routines. In addition, most agreed that they felt more confident teaching since using the routines. Table 11 presents each item's responses.

Table 11

Item Responses for Statements 8 and 9 on the CER Teacher Outcomes Questionnaire

Rating	<i>Strongly Disagree</i>				<i>Strongly Agree</i>		
	1	2	3	4	5	6	7
Item 8: My content knowledge has changed since using the Content Enhancement Routines.							
<i>N</i>	4	1	4	4	9	6	13
%	9.76	2.44	9.76	9.76	21.95	14.63	31.70
Item 9: I feel more confident teaching since using the Content Enhancement Routines.							
<i>N</i>	3	4	3	3	7	10	11
%	7.31	9.76	7.31	7.31	17.07	24.39	26.82

Items 8 and 9 were combined to create a group percentage for this category.

Figure 6 represents the group percentages of the responses from statements 8 and 9.

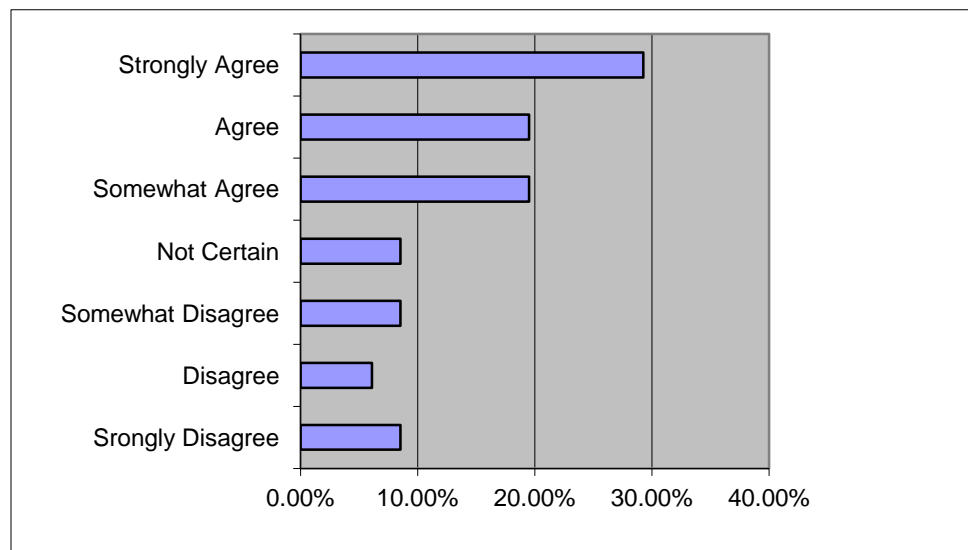


Figure 6. Group responses for statements 8 and 9 on the CER Teacher Outcomes Questionnaire for the CER Teacher Perceptions of How Routines Impacted Instructional Practices category. Numbers represent group percentages.

CER Teacher Perceptions of How School Culture Impacted Routine Use

On the CER Teachers Outcome Survey, statements 10, 12, and 13 focused on teachers' perceptions of how their school culture affected their use of the routines. When analyzing the group percentages of this category of survey responses, teachers reported 78% agreement that their school had established a culture for using the routines. It appeared teachers felt their administrators valued the routines and their implementation in the classroom. In addition, it was evident the CER teacher participants agreed there were system-level supports for their participation in the intervention. Table 12 presents each item's responses.

Table 12

Item Responses for Statements 10, 12, and 13 on the CER Teacher Outcomes Questionnaire

	<i>Strongly Disagree</i>				<i>Strongly Agree</i>		
Rating	1	2	3	4	5	6	7
Item 10: There are system-level supports for my participation in this program.							
<i>N</i>	0	2	4	3	14	8	10
%	0	4.87	9.75	7.31	34.14	19.51	24.39
Item 12: I use the Content Enhancement Routines because my administrator values it and wants them used.							
<i>N</i>	0	2	0	4	8	11	10
%	0	4.87	0	9.75	19.51	26.82	24.39
Item 13: I use the Content Enhancement Routines because there is a culture for their use at my school.							
<i>N</i>	0	1	5	10	6	11	10
%	0	2.44	12.19	24.39	14.63	26.82	24.39

Items 10, 12, and 13 were combined to create a group percentage for this category. Figure 7 represents the group percentages of the responses from statements 10, 12, and 13.

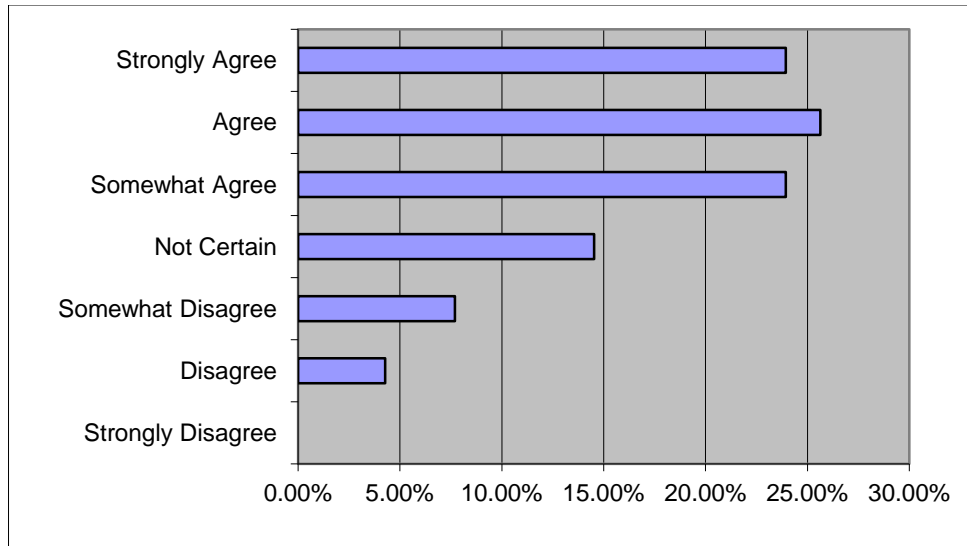


Figure 7. Group responses for statements 8 and 9 on the CER Teacher Outcomes Questionnaire for the CER Teacher Perceptions of How School Culture Impacted Routine Use category. Numbers represent group percentages.

CHAPTER V

DISCUSSION

Over the last decade, adolescent literacy has again captured the national spotlight. A rapidly changing society demands that individuals be literate and be prepared to compete for jobs in a global economy. Individuals must be equipped to learn beyond the high school parameters and be self-directed problem-solvers. With these demands, educators and policy-makers are seeking avenues to assist teachers in equipping students with the necessary skills needed to compete for jobs both nationally and internationally.

The focus of this study was to examine the effects of CERs by gender on literacy achievement in schools in three regions of Arkansas. A casual-comparative study was conducted, and a sample was obtained by matching teachers and students from classrooms utilizing the CERs with teachers and students not utilizing the CERs. In addition, they were matched according to their location (three regions of Arkansas), socioeconomic status, provided curriculum, and student grouping. The independent variables for the study were type of instruction and gender. The dependent variable was literacy achievement measured by scale scores from the 2010 Arkansas Augmented Benchmark Examination.

First, this chapter includes a reflection of the data collected and analyzed in this study. Second, recommendations based on the conclusions found in the data analysis are included for educators and policy-makers involved with the Arkansas Adolescent

Literacy Intervention. Finally, the implications and significance of this study are discussed.

Conclusions

To address the first, second, and third hypothesis, three 2 x 2 factorial ANOVAs were conducted using type of instruction (CERs versus Traditional) and gender (female versus male) as the between subject independent variables and literacy achievement as the dependent variable. Hypothesis 1 included sixth grade students, hypothesis 2 included seventh grade students, and hypothesis 3 included eighth grade students. To test the null hypotheses, the researcher used a two-tailed test with a .05 level of significance. Main effects and interaction effects in hypothesis 1, 2, and 3 were examined. Finally, a research question was analyzed using descriptive statistics and included teachers utilizing the CERs in three regions of Arkansas. For the research question, frequency of individual and group survey responses of teacher participants was analyzed.

Hypothesis 1

Hypothesis 1 stated that no significant difference will exist by gender between sixth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement. There was no significant interaction between the independent variables of type of instruction and gender and the dependent variable literacy achievement. Together, gender and type of instruction did not affect how individuals scored on the 2010 Arkansas Augmented Benchmark Examination in literacy. Based on these results, the null hypothesis for the interaction effect could not be rejected. For the main effect of type of instruction, no significant difference on literacy achievement was seen between

students exposed to the CER instruction and those exposed to the traditional instruction; however, a significant difference was found on literacy achievement for sixth grade students based on the main effect of gender. Based on these results, there was not enough evidence to reject the null hypothesis for the main effect of type of instruction, but there was enough evidence to reject the null for the main effect of gender.

For this hypothesis, sixth grade male CER participants had a higher mean than the traditional instruction participants. On the other hand, sixth grade female traditional instruction participants had a higher mean than that of their female CER counterparts. In the review of literature, research by the KU-CRL (2009) indicated that CERs are beneficial for all students due to the organization and manipulation of important content. This outcome was an unpredicted difference, suggesting that more data needs to be collected and analyzed to identify factors that might be contributing to the implementation of the CERs by classroom teachers and the use of the routines by students.

Research indicated that the CERs had a significant impact on student achievement when teachers utilized the routines with fidelity (Boudah et al., 1994). In this study, no significant difference existed by gender between sixth grade students in three regions of Arkansas whose teachers utilized CERs and those whose teachers did not utilize the routines on literacy achievement. One contributing factor for this chance result could have been that teachers involved in the study varied in the number of years they had been implementing the routines. The criterion for this study was a minimum of one year's participation in the intervention. With this variance of implementation, not all teachers might have achieved a high level of fidelity. In addition, teachers were only required to

implement a minimum of two routines. With these minimum requirements, teachers did not have opportunities to utilize the newly learned routines with students on a regular basis because each Routine addresses a different area of content literacy.

Hypothesis 2

Hypothesis 2 stated that no significant difference will exist by gender between seventh grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement. There was no significant interaction between the independent variables of type of instruction and gender and the dependent variable literacy achievement. Together, gender and type of instruction did not affect how individuals scored on the 2010 Arkansas Augmented Benchmark Examination in literacy. Based on these results, the null hypothesis for the interaction effect could not be rejected. For the main effect of type of instruction, no significant difference on literacy achievement was seen between students exposed to the CER instruction and those exposed to the traditional instruction; however, a significant difference was found on literacy achievement for seventh grade students based on the main effect of gender. Based on these results, there was not enough evidence to reject the null hypothesis for the main effect of type of instruction, but there was enough evidence to reject the null for the main effect of gender.

Investigation of the data indicated that seventh grade male CER participants had a higher mean than the traditional instruction participants did. The same result occurred with the sixth grade male participants. On the other hand, in the same vein as the female sixth grade participants, the seventh grade female traditional instruction participants had a higher mean than that of their female CER counterparts. These were surprising findings

because research indicated the CERs were beneficial for all students when learned in a controlled setting (Bulgren et al., 2002). Again, a contributing factor for this result could have been that the routines were not the only strategies being used in some of the classrooms. Both students and teachers were using multiple strategies, including non-routine strategies, while learning and implementing the routines. Because the routines constitute a newer intervention, teachers have had a limited number of opportunities to learn and use the routines in their classroom instruction. Another contributing factor to these outcomes could have been the number of times teachers actively involved students in the learning process by creating the visual device together. Research indicated that the CERs produce significantly better results when implemented on a consistent basis and students received multiple exposures to the routines (Bulgren et al., 2002). However, for this hypothesis, the main effect of type of instruction produced no significant difference on literacy achievement between students exposed to the CER instruction and those exposed to the traditional instruction.

Hypothesis 3

Hypothesis 3 stated that no significant difference will exist by gender between eighth grade students in three regions of Arkansas whose teachers utilized the Content Enhancement Routines and those whose teachers did not utilize the Routines on literacy achievement. There was no significant interaction between the independent variables of type of instruction and gender and the dependent variable literacy achievement. Together, gender and type of instruction did not affect how individuals scored on the 2010 Arkansas Augmented Benchmark Examination in literacy. Based on these results, the null hypothesis for the interaction effect could not be rejected. For the main effect of type

of instruction, no significant difference on literacy achievement was seen between students exposed to the CER instruction and those exposed to the traditional instruction; however, a significant difference was found on literacy achievement for eighth grade students based on the main effect of gender. Based on these results, there was not enough evidence to reject the null hypothesis for the main effect of type of instruction, but there was enough evidence to reject the null for the main effect of gender.

Only in this hypothesis did the eighth grade male traditional participants have a greater mean than their CER counterparts. In the two previous hypotheses, the sixth and seventh grade male CER participants outscored the traditional male participants. The data for the females, however, were consistent with the first two hypotheses. Data indicated that eighth grade female traditional instruction participants' mean was greater than the eighth grade female CER participants' literacy mean. One contributing factor to these results could have been students' and teachers' perceptions of the how well the routines assisted teachers in instructing strategically and students in acquiring abstract content. Another factor might be the limited amount of time participating teachers had to learn and implement the CERs.

Past efforts taken to improve adolescent literacy indicate educators must determine what works and what does not work for both teachers and students in classrooms. In this hypothesis, the main effects for gender and type of instruction were not significant. This lack of statistical significance reflects the idea that educational change may take several years of goal setting to become firmly established (Fullan, 1991).

Research Question

The research question in this study investigated how teachers trained in the Content Enhancement Routines in three regions of Arkansas felt about using the routines in their classrooms and about the professional development process of the Strategic Instruction Model. The survey consisted of 13 items (statements) that were analyzed according to four main categories:

- CER Teacher perceptions of how students viewed the routines
- CER Teacher perceptions of how the routines impacted students' academic performance
- CER Teacher perceptions of how the routines impacted their instructional practices
- CER Teacher perceptions of how their school culture impacted their use of the routines

By using descriptive statistics, the four main categories of survey responses of teacher participants were analyzed.

According to this research, CER teacher participants viewed the routines favorably and would continue to use them. Teachers also perceived that their students viewed the routines favorably, but teachers felt that the students did not view the routines as favorably as they did. Even though their students were less satisfied with the routines than their teachers were, the teachers felt that students liked the routines and found them easy to use. The results of this study were consistent with the research reported on teacher and student CER satisfaction (Bulgren et al., 2000). Students have found the routines favorable due to their organization and visual representation of what information is most

important for them to know. In addition, it allows them to filter out important content from unimportant content more easily. They also have found the visual devices as helpful study tools. CER teacher participants agreed their students viewed the routines in a positive manner and found them easy to use.

Research by Darling-Hammond et al. (2009) indicated that professional learning improves teachers' practices and student learning. In this study, teachers agreed that the CERs had influenced students' performance in a positive manner. In addition, they reported their students had benefited from the use of the routines. Teachers noted that the routines provide them with a framework for the planning process for determining the most important content from within a large pool of standards and skills their students are to learn. The process has given them an instructional sequence to utilize with each Routine's visual device. This instructional sequence allows them to have interactive discussions centered on the pre-determined content with their students. The guidebooks have also been reported as a positive aspect of the 14 routines because they are designed and structured with the same goal in mind. Teachers have found the books easy to understand and suggest that they like the visual device examples provided at the back of the books for each core content subject.

Teacher participants in this study reported that they found the routines easy to use and felt they had affected their own instructional practices. CER teachers involved in other research studies indicated that they were satisfied with certain aspects of the CER program and would continue to use the routines (Bulgren et al., 2000). In addition, they reported using more analogies within their instruction due to learning the Concept Anchoring Routine. This routine provided teachers with a mechanism for assisting

students in learning a new concept by creating an analogy that connected their background knowledge and experiences to the new concept to be learned.

The overall feel from teacher participants in this study was that there were system-level supports for their participation in the intervention and overall school cultures that supported their use of the routines. These results reflect what research considers high quality professional development (National Staff Development Council, 2001). High quality professional development systems may include activities such as co-planning lessons and units, developing assessments, reviewing student work, and problem-solving classroom dilemmas with other teachers.

This study produced conflicting and interesting results. Although the study produced a lack of ability to reject the three null hypotheses, the research question produced very positive perception responses from the CER participating teachers. These results align with Fullan and St. Germain's (2006) idea that educators need to remember that even the best planned efforts will not always go smoothly. A common experience for many people and groups as they navigate change is the implementation dip. This phenomenon occurs for most people at the beginning stages of learning something new, whether it is learning a new golf swing or learning a new instructional practice. The dip in performance and competence comes as people not only learn a new skill but unlearn established habits. The National Commission on Teaching and America's Future (1996) stated that investments in teacher knowledge and skills net greater increases in student achievement than other uses of an educational dollar. The conflicting results of this study may stem from the intervention being new for many of the participating teachers, so time

is needed to truly determine the net results of this intervention for Arkansas teachers and students.

Recommendations

Current research indicates that teachers who receive substantial professional development can boost their students' achievement by approximately 21 percentile points (Yoon & Lee, 2007). The authors suggest that substantial professional development is an average of 49 hours on a single topic. Therefore, the first recommendation is that the teachers involved in the intervention should participate in a minimum of eight professional learning activities. These activities should consist of meetings with peers to discuss implementation pitfalls and successes with previously learned CERS and to learn new routines with specific focus on the pieces of fidelity (visual device, linking steps, and the cue-do-review sequence). They should also include ample time to plan for the use of the newly learned routines with upcoming content, to observe other teachers using the routines, and to participate in fidelity checks. These opportunities might occur during professional development days, individual planning times, departmental planning times, team planning times, or other scheduled opportunities the school deems reasonable.

In this study, consideration was given to students who received instruction from a teacher who had participated in the intervention for a minimum of one year and had learned and implemented at least 2 of the 14 routines in the classroom. A second recommendation is that principals and teachers continue to learn about the routines and that teachers should implement more of the 14 routines immediately upon returning to the classroom. Principals should continuously evaluate the progress of both students and teachers through utilizing the CER Fidelity Checklist, conducting Classroom

Walkthroughs, and participating in professional developments and coaching sessions with participants. Principals and teachers learn important information about implementation by checking the successes and failures of implementation. They must know what is working and why. They must also know what is not working for both teachers and students in order to make necessary adjustments to the implementation process. Roy (2010) suggests that leaders continually “touch base” with implementers, seek input about the teachers’ needs, and assess the implementation progress.

A third recommendation is for schools purposefully to plan two one-hour weekly opportunities for teachers participating in the intervention to meet, plan, and problem solve together. In a study of five high-performing, high poverty high schools, Darling-Hammond and Friedlaender (2008) found that the schools allocated considerable time for teachers to collaborate, design curriculum and instruction, and learn from one another. The teaching team should have a minimum of one hour of organized meeting time per week for them to plan and problem solve together.

The minimum requirements for teachers participating in this study were participating in the intervention for a minimum of one year and learning and implementing at least 2 of the 14 routines. A fourth recommendation is to conduct a study with more rigorous requirements as the intervention becomes more widely known and the implementations times lengthen. Studies could require teacher participants to be involved in the intervention for two or more years and to learn and implement at least half of the 14 routines.

Implications

Significance and Expansion of Knowledge Base

This study provided insight into the effects of CERs by gender on literacy achievement in schools in three regions of Arkansas by using the 2010 Arkansas Augmented Benchmark Literacy Examination. In addition, it provided insight into participating CER teachers' perceptions of the intervention professional development process. These findings will assist state department personnel, policy-makers, AALI/UCA leaders, and school personnel in making decisions regarding funding, professional development design, collaboration and learning structures, on-going evaluation, and resources needed to support the implementation of the routines.

Within the constrictions of the school setting, a strength of the study was that the student sampling technique provided a balanced sample over the three regions of Arkansas. The student populations were matched by SES status, grade-level, general education curriculum, and heterogeneous grouping of students. Another strength of the study was its uniqueness in focusing on the effects of the CERs by gender.

Future Research Considerations

First, future researchers might consider building on this study by using an experimental or quasi-experimental design. This would allow the researchers to control the type of instruction teachers provide for students by manipulating the intervention and ensuring the implementation of the routines with all three essential pieces of fidelity (visual device, linking steps, and the cue-do-review instructional sequence). In addition, the researchers could guarantee the time for CER participants to meet, plan, and problem solve together. The results from these types of studies would be more valid and could

allow educators and policy-makers a better view of the effects of CERs by gender on literacy achievement in Arkansas schools.

Second, further research could investigate how the CERs impact student achievement at different schooling levels including the middle, junior high, and high school levels. In addition to gender, studies could expand to other independent variables including race, SES, other regions of the state, and many other interesting variables. Studies could also delve into other dependent variables as well as achievement such as self-esteem, behavior, problem solving skills, and others. Researchers could design studies that investigate not only between group methods but within subjects methods by looking at the implementation of the routines over a period of time with repeated testing.

Potential Policy Changes

Adolescent literacy has become a national topic due to a rapidly changing society. This society demands that individuals not only be able to read but read for understanding and become self-directed problem solvers. With these demands, educators and policy-makers are constantly seeking avenues to improve the literacy skills of today's adolescents. The CERs are one of the avenues being considered nationally and internationally as one way to address the literacy needs of adolescents.

To meet the challenges of a changing society, state policy makers and schools need to respond with specific policy standards. First, state policy makers should commit to supporting teacher participants, administrators, and curriculum specialists in new types of interventions such as the CERs. This level of commitment would promote opportunities for certified CER professional developers to provide on-site and intensive professional development, coaching, and on-going support at the district and school level.

Second, schools should provide should offer their commitment by presenting effective professional development that is primarily on-site, intensive, collaborative and job-embedded, and is designed and led by educators who model the best teaching and learning practices (Wagner et al., 2005). The professional development model should also embed a plan designed for sustainability, scalability, and flexibility. Because the administrators and curriculum specialists are invaluable in the process, they would be required to participate in all professional learning activities with teacher participants. During this learning process, administrators should be required to purposefully plan for weekly collaboration for the participants. In addition, they should be required to monitor for implementation and provide feedback to participants and professional developers. Administrators should work with the regional CER professional developers to identify potential local professional developers at each participating school site and support their development in becoming certified CER professional developers.

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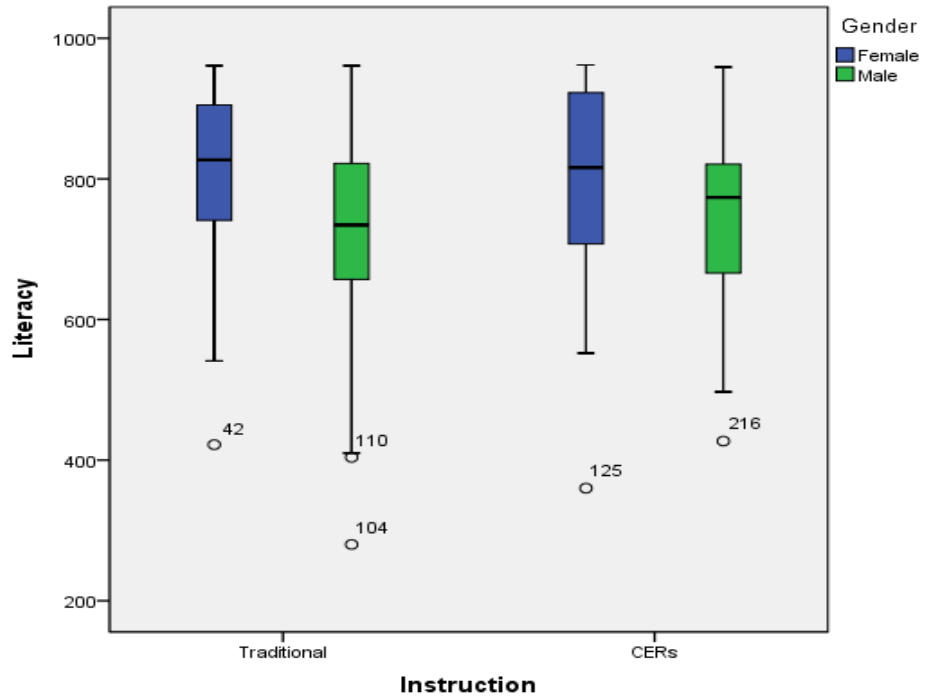
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APPENDICES

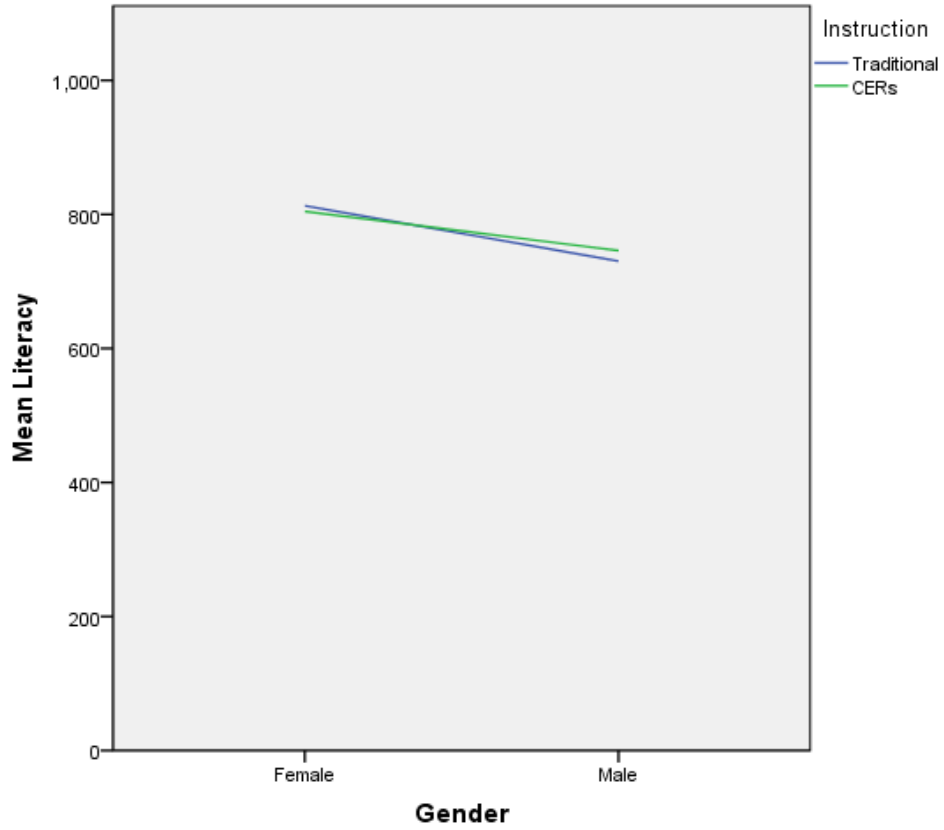
Appendix A

Sixth Grade Literacy Group Scale Score Comparison



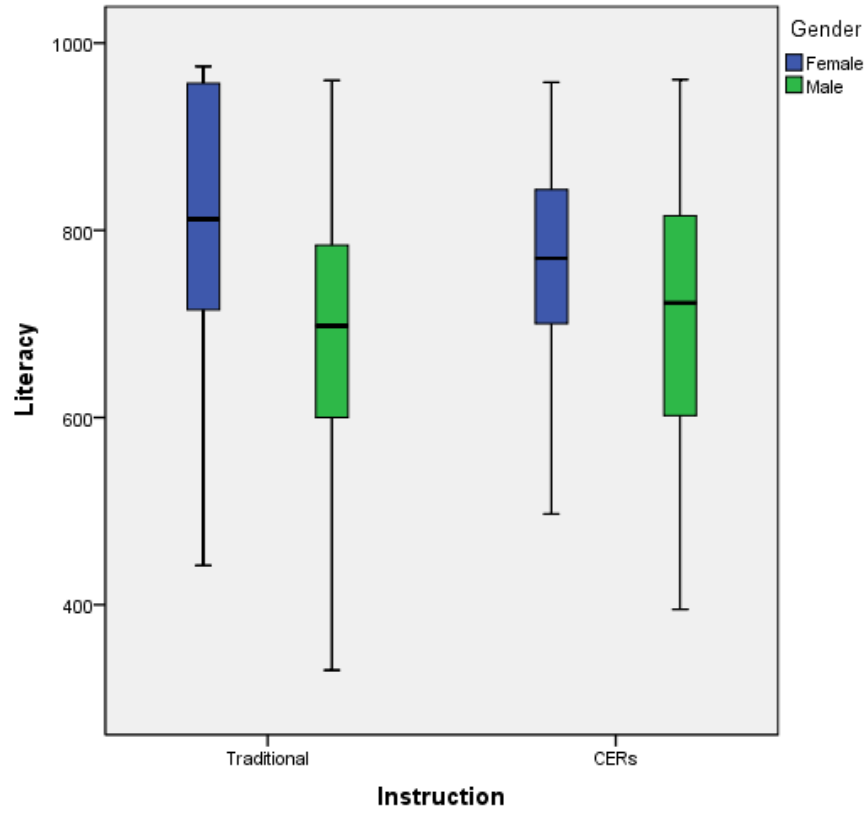
Appendix B

Sixth Grade Estimated Marginal Means of Literacy Scale Scores



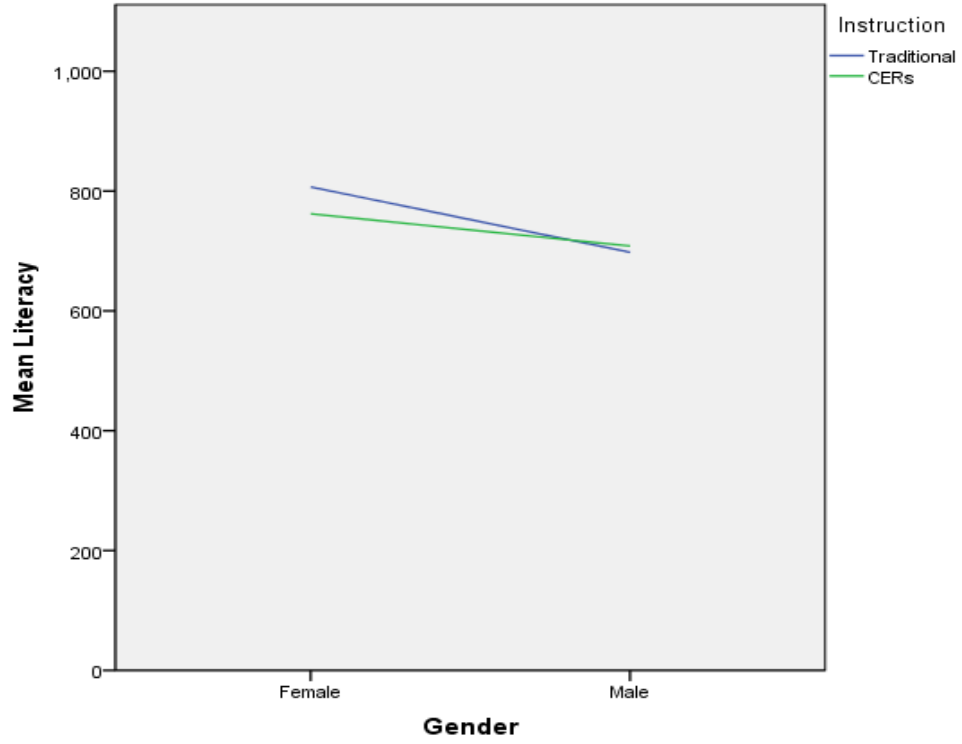
Appendix C

Seventh Grade Literacy Group Scale Score Comparison



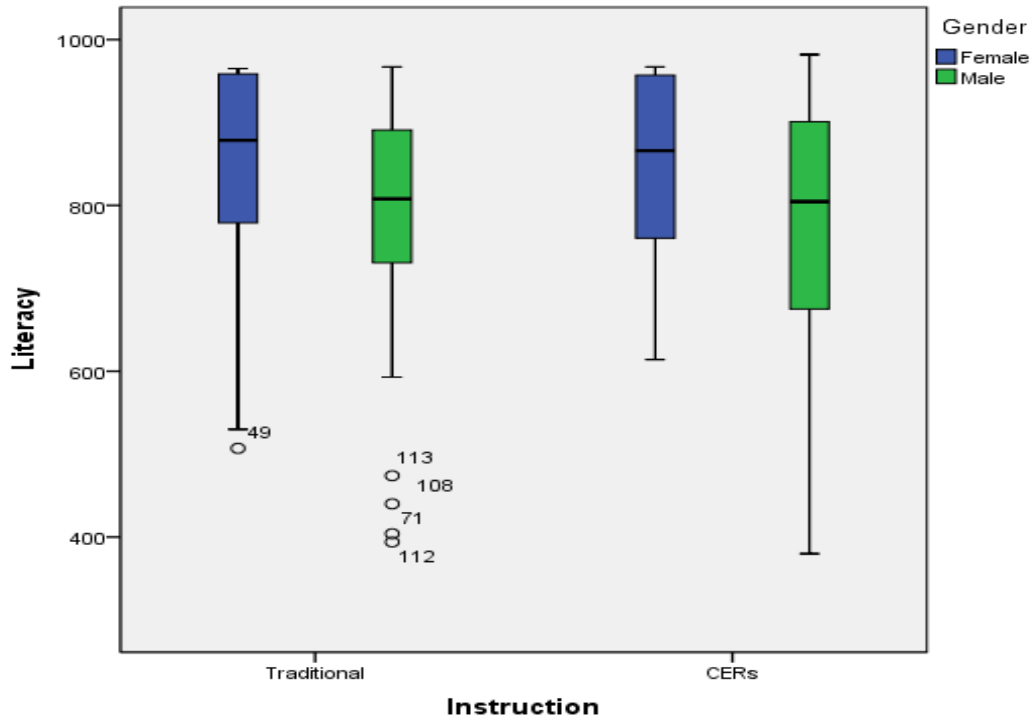
Appendix D

Seventh Grade Estimated Marginal Means of Literacy Scale Scores



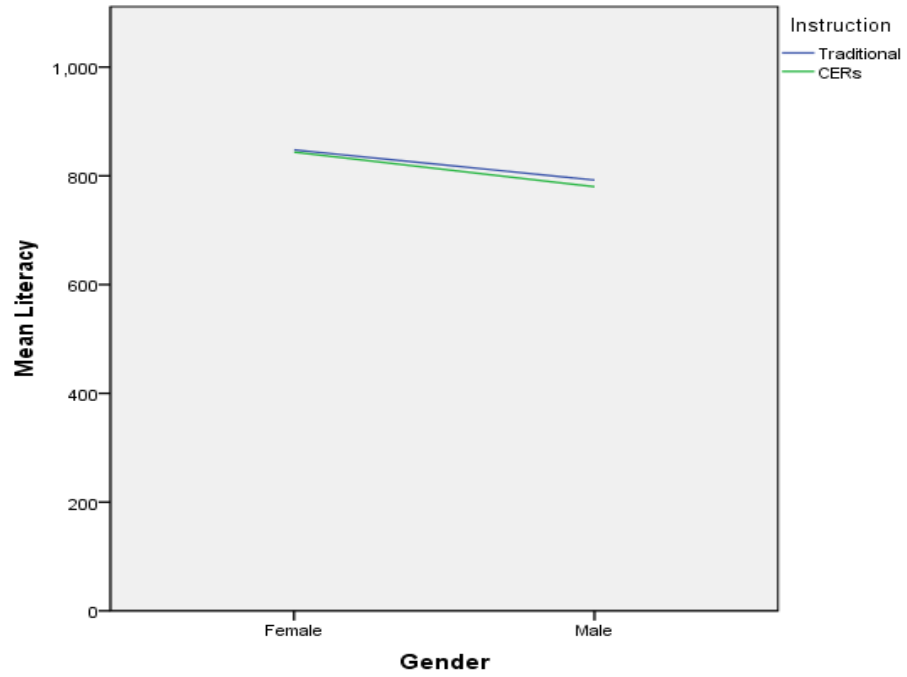
Appendix E

Eighth Grade Literacy Group Scale Score Comparison



Appendix F

Eighth Grade Estimated Marginal Means of Literacy Scale Scores



Appendix G

Status of Request for Expedited Review



Status of Request for Expedited Review

(For Board Use Only)

Date: October 11, 2010

Proposal Number: 2010-66

Title of Project: Effects of Content Enhancement Routines by Gender on Literary Achievement in Arkansas Schools

Principal Investigator(s) and Co-Investigator(s): K. Renee Calhoon bcalhoon@centurytel.net

-
- Research approved. (See comments attached.)
- Approved with modifications. (See attachment.)
- Committee requests further information before a decision can be made.
- This proposal has been denied.
-

I have considered your request for an **expedited review**, and my decision is marked above. Please review the appropriate text below for the decision that was rendered regarding your proposal:

Research Approved: If your protocol has been approved, please note that your project has IRB approval from today for a period of one year and you are free to proceed with data collection. If this study continues unchanged for longer than one year, you will need to submit a **Request for Project Continuation**. If there are changes to the research design or data that is collected, you will need to submit a **Request for Amendment to Approved Research** form. The IRB reserves the right to observe, review and evaluate this study and its procedures during the course of the study.

Approved with Modifications: If approved with modifications, you are allowed to proceed with data collection provided that the required modifications (see attached) are in place. You will need to submit an **Amendment to Approved Research** form within 30 days. If this study continues unchanged from that amended protocol for more than one year, you will need to submit a **Request for Project Continuation**. If this study continues for more than one year and there are changes to the research design or data that is collected, you will need to submit a **Request for Amendment to Approved Research** form.

Committee requests further information: Please see the attached document and use it to guide required modifications, then re-submit your request.

This proposal has been denied: See the attached document for an explanation of why your proposal has been denied.

A handwritten signature in cursive script, appearing to read "Ken Pearson York".

Chair, Harding University Institutional Review Board