A Preliminary Investigation of the Effects of a Professional Development Training on Secondary Students' Reading Scores

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A PRELIMINARY INVESTIGATION OF THE EFFECTS OF A PROFESSIONAL DEVELOPMENT TRAINING ON SECONDARY STUDENTS’ READING SCORES

A Specialist Project
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
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Of the Requirements for the Degree
Specialist in Education

By
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A PRELIMINARY INVESTIGATION OF THE EFFECTS OF A PROFESSIONAL DEVELOPMENT TRAINING ON SECONDARY STUDENTS’ READING SCORES

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Much of the emphasis on interventions to improve literacy skills has been focused on the primary grade levels. Over the last decade, an increasing amount of research has stressed the need for effective reading interventions for adolescents. However, little research has evaluated effective professional development of secondary teachers in the area of literacy. The current study examines the results of embedded teacher professional development in the form of an intensive summer reading program on student reading achievement. Students reading below the 50th percentile at the end of seventh and ninth grades were identified. The final sample consisted of 92 students who participated in the summer program in its entirety. The program consisted of four weeks (20 sessions) of reading instruction. For the students below grade level, grade equivalent scores significantly increased one-third to one-half of a year. Limitations of the current study are discussed as well as recommendations for future research.
Introduction

Literacy skills are an integral part of learning in all subject areas. While early elementary literacy scores have drastically improved in the last decade, adolescent literacy scores have remained stagnant for the past 30 years with 12th grade students’ achievement scores declining in the last 10 years (Carnegie Council on Advancing Adolescent Literacy, 2010; Kamil, 2003). Such research suggests that early performance gains in the primary grades do not necessarily transfer to high achievement in the middle and high school years. Snow and Moje (2010) refer to this problem as the “inoculation fallacy” (p. 66). This refers to the inaccurate assumption that large amounts of high quality reading instruction in early elementary school without continuing literacy instruction in later grades will protect against reading failure for the remainder of a student’s academic career.

Over the last decade, an increasing amount of research has focused on the literacy proficiency of adolescents. Such an increased research focus is needed. According to Somers et al. (2010), over 70 percent of students enter high school with less than proficient reading skills. Rathvon (2008) states that reading problems are “especially acute at the middle school and high school levels, where instruction is primarily text-based and students are expected to be able to use reading to learn” (pp. 175-176). The lack of literacy skills shown by many students affects not only their achievement in language arts classes, but also increases the likelihood of dropping out of school, failure in other classes and failure in postsecondary education (Joftus, 2002; Somers et al., 2010).
The effects of inadequate literacy skills extend past high school and higher education to job performance, and most jobs are becoming more dependent on reading and writing abilities because literacy demands continually increase. In the 10-year span between 1996 and 2006, it is estimated that the average literacy requirement for American occupations rose by 14 percent (Barton, 2000). Unfortunately, while the focus on adolescent literacy is becoming an increasing need, limited resources often result in school districts choosing to focus their efforts on literacy initiatives in the elementary schools (Center for Summer Learning, 2007). Middle and high school students are often put into remedial classes that water down the material but do not address the multiple needs of struggling adolescent readers.

According to Biancarosa and Snow (2006), one of the most difficult challenges surrounding the literacy deficits of middle and high school students is the breadth of issues that these students face. Problems can range from a deficit in reading fluency to a lack of effective reading comprehension strategies. Other students may possess comprehension strategies but are only able to apply them to a narrow range of texts. Due to the wide range of possible reading problems, there is no single intervention that will increase the reading achievement for all struggling students. Adolescent literacy interventions need to be multifaceted, containing several instructional, student, and teacher elements (Mallette, Schreiber, Caffey, Carpenter, & Hunter, 2009).

In order to create a higher standard of teaching and learning for Kindergarten through 12th grade teachers and students, the Common Core State Standards were developed by states as well as the National Governors’ Association and the
Council of Chief State School Officers (NGA & CCSSO, 2010). Input from educational research, various state standards, community leaders, public associations, postsecondary educators, elementary and secondary teachers, administrators, and parents was considered when developing the Standards. Final drafts of the English language arts and mathematics standards were made public in June 2010. As of January 2013, 45 states and the District of Columbia will have officially adopted the standards. The K-12 Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects emphasize the idea that all students should be college and career ready in literacy by the end of 12th grade. Developers of the Standards recognize that students need literacy skills in various content areas to be successful in a variety of fields (NGA & CCSSO, 2010; Youngs, 2013). With the adoption of these new rigorous standards, there is a major push for high quality, effective teacher professional development and subsequent implementation.

**Statement of the Problem**

Often, teachers and administrators hold the belief that children who are successful readers by 3rd grade have the skills necessary to dissect and comprehend higher-level fiction and non-fiction texts in middle and high school (Biancarosa & Snow, 2006). The stagnant standardized test scores of secondary students over the last decade as well as the increasing amount of postsecondary students enrolled in remedial reading classes have encouraged researchers to focus on the unique needs of readers who struggle in the upper grades (Snow & Moje, 2010).

Many studies exist regarding what works to increase adolescent literacy achievement (Kamil, 2003). Unfortunately, many secondary content area teachers are ill
prepared to take on the task of literacy instruction (Joftus, 2003). While certain comprehension skills taught in English class may be adequate for texts presented in that environment, the different content areas (e.g., math, science, history, etc.) each have their own unique set of literacy needs. These teachers must possess the knowledge regarding how to teach specific reading strategies. Teacher professional development in content area reading strategies is one seemingly obvious way to address teachers’ shortcomings in literacy instruction (Goldman, 2012; Snow & Moje, 2010). The research regarding the effect of teacher professional development on student achievement is limited. Research on this subject that focuses on middle and high school teachers and students is almost non-existent.

**Purpose of the Study**

The purpose of this study was to examine the effects of an embedded professional development model in the form of a summer reading program on reading achievement in middle and high school students. Embedded professional development is a form of professional development in which teachers learn new skills within the framework of their jobs. Embedded professional development provides opportunities for collaboration with co-workers and individual support from those delivering the professional development (Croft, Coggshall, Dolan, & Powers, 2010). The intent of this study is to answer the following research questions:

1. What impact does embedded professional development have on student reading achievement?
2. What impact does teacher integrity of implementation have on the overall reading achievement scores of students in each teacher’s class?
Literature Review

There is a well-documented need for increasing the literacy skills of adolescents. Students who do not demonstrate proficiency in reading through middle and high school show an increased rate of dropping out of school, failing attempted post-secondary classes, and struggling to obtain adequate employment after high school (Joftus, 2002; Somers et al., 2010). An increasing body of research exists regarding effective strategies for increasing the reading achievement of adolescents. The new Common Core Standards address the fact that secondary students need literacy instruction in content areas to successfully learn using text-based material (Youngs, 2013). Kamil (2003) indicates that, although secondary content area teachers realize that students do not have to comprehension skills to understand subject matter, these teachers are often unfamiliar with effective literacy instruction. According to Croft et al. (2010), embedded professional development that addresses pedagogy and research-based literacy strategies is needed to address the deficit in literacy instruction. This literature review will address the topics of effective professional development, researched based comprehension strategies for secondary students, and the benefits of various strategies for improving literacy skills in adolescents.

Professional Development

Successful adoption and implementation of the new Common Core State Standards and the corresponding content require high quality professional development for teachers. According to Youngs (2013), “professional development should have a strong content focus, engage teachers as active learners, be of sufficient duration, and
involve participation with colleagues. In particular, it should help teachers acquire both content knowledge and pedagogical content knowledge” (pp. 7-8).

Professional development needs to be an ongoing process that caters to the needs of the specific school (Shannon & Bylsma, 2007). According to Croft et al. (2010), instead of attending traditional large-scale professional development seminars, teachers need to be engaged in relevant learning activities, as well as observe the techniques that are being taught. After teachers have learned a new skill or teaching strategy, they need to have time to practice, reflect, and collaborate with others on issues encountered during the implementation of the new material. Professional development must be ongoing and intensive, as the reflection and collaboration process and integral parts of learning and applying new strategies. Teachers at successful schools have been shown to use planning time and meetings to effectively incorporate these steps of professional development. Self and peer reviews have also been shown to increase discussion and problem solving in regards to teacher practices (Darling-Hammond & McLaughlin, 2011).

Darling-Hammond and Richardson (2009) define high quality professional development by giving specific suggestions in the three following areas: (a) content, (b) context, and (c) design. The content of professional development needs to focus on student learning of specific content and developing teachers’ instructional skills for teaching the content. The professional development should involve teacher reflection on personal experiences and observations rather than general, abstract discussions of a topic. Information presented and discussed needs to be directly applicable to the needs of the teacher in order to increase their competency. After the teacher has had a chance to apply the new content in their teaching practices, the content should be revisited to allow
teachers to deliberate on the most effective ways to apply the newly learned information. The context refers to how the professional development fits into the overall plan of school improvement. Information learned in professional development should fit with the policies and curriculum of the school. Teachers should be able to easily implement the skills learned in professional development into their daily curriculum. Teacher collaboration within the school is another important aspect of effective professional development. Discussing successes and setbacks periodically creates an atmosphere of support and allows teachers to continually learn from one another during implementation of new practices. The design of professional development addresses how teachers learn new skills. The most benefit is derived from a process in which new strategies are modeled for teachers. After a new skill is modeled, teachers must be able to practice the new strategies and contemplate their ability to implement the new strategies. The time and intensity of the professional development must be sufficient for teachers to significantly change their behaviors.

Regarding literacy specifically, coaching has been implemented with positive results (Kamil 2003). Coaching encourages teachers to problem-solve and the literacy specialist would help content area teachers understand and teach effective literacy strategies to their students. Bryant, Linan-Thompson, Ugel, Hamff, and Hougen (2001) stated that a collaborative approach between school districts and outside experts has been shown to be effective in increasing internal collaboration among teachers as well. Several studies have shown that internal collaboration of teachers is increased when outside experts, in these cases, university-based researchers, provide the on-going professional development and training (Bryant et al., 2000; Bryant et al., 2001).
Although professional development in schools has been widely discussed, very few studies effectively address the connection between high quality professional development and student achievement. A meta-analysis conducted by Yoon, Duncan, Lee, Scarloss, and Shapley (2007) examined over 1,300 studies regarding the effect of teacher professional development on student achievement gains across math, science, and English/language arts. Of these studies, nine met the U.S. Department of Education’s Institute of Sciences requirements for empirical studies (What Works Clearinghouse, 2013). Of these nine studies, four focused on English/language arts achievement, two focused on math and English/language arts achievement, and one focused on science, math, and English/language arts achievement. The remaining two focused solely on math achievement gains. All nine studies focused on elementary school teachers and students. Across the nine studies on which this meta-analysis was focused, 20 effect sizes of the increase or decrease in student achievement were computed. Of these 20 effect sizes, 18 were positive, one was 0, and one was negative. The 18 positive effect sizes ranged from .12 to 2.39. Yoon et al. (2007) further broke down the effects on student achievement into three categories: (a) effects by content area (b) effects by form, contact hours, intensity, and duration of professional development, and (c) effects by models and theories of action of professional development. The average effect size was consistent across the three content areas: science = .51, mathematics = .57, and English/Language Arts = .53. All nine of the studies involved direct instruction to teachers in the form of workshops or summer institutes. Contact hours ranged from 5 to 100 hours with all studies over 24 hours showing significant positive effects on student achievement. Although the nine studies varied greatly in content of their respective professional development, patterns
arose in the structure of the professional development. The professional development model of all nine studies addressed teacher behavior and how students learn.

**Content Area Reading**

Content area reading refers to the literacy skills needed to comprehend and utilize information gathered from narrative texts (Marchand-Martella, Martella, Modderman, Peterson, & Pan, 2013). Kamil (2003) stated that content area reading becomes especially important in the upper grades and that textbooks are used as the primary way to support learning in content area classes. Unfortunately, research suggests that one out of four adolescents cannot identify the main idea of a passage or understand the informational text presented to them (Kamil, 2003). Often students who were able to read well enough to get by in the primary grades are not able to keep up with the new demands of reading, comprehending, and applying informational texts. Marchand-Martella et al. (2013) suggest that students struggle with content area reading material because of their lack of experience with expository texts, the denseness of the material, the difficult to follow organization of the texts, the difficult and unfamiliar vocabulary associated with science and social studies material, and the lack of students’ prior knowledge of the topics.

According to Greenleaf and Hinchman (2009), high school students “face an impoverished curriculum, receiving literacy instruction that is ill suited to their needs, or worse, receiving no literacy instruction at all” (p. 4). The authors go on to state that content area teachers do not have the skills to teach literacy strategies to their struggling students. These teachers may not be prepared to explicitly teach the literacy strategies necessary for comprehending and learning from these texts. It is a pervasive attitude of
secondary content area teachers that it is not their job to teach reading, but to teach the material of their expertise (Kamil, 2003). Content area teachers are often pressured to cover curriculum content quickly, leaving little time to model and scaffold appropriate reading and comprehension strategies for struggling students (Greenleaf & Hinchman, 2009).

Explicit instruction is imperative in addressing literacy instruction for adolescents. Explicit instruction involves teacher modeling of specific skills, guided practice with feedback from the teacher, and independent practice (National Institute for Literacy & National Institute of Child Health And Human Development [NIFL & NICHD], 2007). When learning new strategies, students should be given practice with a wide variety of texts. Only when a student begins to show competency should the teacher slowly take away support to allow the student to independently use the strategy (Biancarosa & Snow, 2006).

Comprehension Strategies and Instructional Approaches

According to the Carnegie Council on Advancing Adolescent Literacy (2010), students in the secondary grades must master the challenge of moving from “learning to read” to “reading to learn,” meaning that simply being able to read words fluently does not mean that students have the skills to comprehend complex texts within each academic discipline (p. x). Goldman (2012) states that a variety of comprehension strategies and instructional approaches are needed to teach students how to understand, analyze, and problem solve with a variety of texts in different content areas. Goldman (2012) reviewed the evidence of the effectiveness of three different instructional approaches: (a) strategy-based instruction, (b) discussion-based instruction, and (c) content-based instruction.
Various types of reading strategies can be taught within each of these instructional approaches.

**Strategy-based instruction.** Strategy-based instruction is the most widely researched and recommended type of reading instruction. Goldman (2012) defines strategy-based instruction as the explicit teaching of one or more reading comprehension strategies. According to Marchand-Martella et al. (2013), explicit instruction is needed to teach comprehension strategies to students who struggle with reading comprehension. Explicit instruction involves the use of “teacher modeling, guided student practice with feedback, and independent student practice” (p. 166). Students who are able to comprehend complicated texts employ a variety of strategies before, during, and after reading.

**Pre-reading.** Prior knowledge of a topic increases a reader’s ability to attend to and comprehend text on the topic (Lee & Spratley, 2010). According to Smith (2003), teachers should create or build upon prior knowledge by using pre-reading strategies. Pre-reading strategies can include previewing text headings, previewing relevant vocabulary and asking students to make inferences about the text (Ambe, 2007; Marchand-Martella et al., 2013).

Dole, Valencia, Greer, and Wardrop (1991) compared the effectiveness of two types of pre-reading strategies with a sample of 63 fifth grade students. The first strategy was a teacher directed strategy in which the teacher explicitly identified and explained important information in the text. The second strategy was an interactive strategy in which students were engaged in a conversation about the upcoming text for the purpose of activating their prior knowledge about the topic. In both treatment conditions, students
were asked to think about their prior knowledge regarding the topic of the text they were to read. Students were assigned to one of three groups. All groups were exposed to three conditions: the teacher directed strategy, the interactive strategy, and a control condition where no pre-reading strategy was used. Each treatment condition was administered twice, once with a narrative text and once with an expository text. The control treatment was presented during the first week, the teacher directed strategy during the second week, and the interactive strategy during the third week. After each strategy was administered, students were told to read a given passage and answer written comprehension questions. The teacher directed strategy proved to be statistically more effective than the interactive strategy. Both strategy groups were more effective than the control. There was no significant difference in the genre of text. This study demonstrates the importance of helping students activate their prior knowledge while structuring the pre-reading activity to include important background information, key elements of the text, and a purpose for reading the text as students may have had no exposure to the topic at hand.

Vocabulary knowledge is strongly tied to overall reading achievement (Kamil, 2003). Research has shown that direct instruction of vocabulary as well as vocabulary acquired in the context of reading are both important in improving a student’s vocabulary (Kamil, 2003).

In a study conducted by Burns, Hodgson, Parker, and Fremont (2011) designed to identify the effectiveness of a keyword pre-teaching intervention, 19 eighth grade students were chosen to participate based on school referral that the students were struggling readers. Students were split into groups of four or five to receive the intervention. This study used three reading passages and 10 corresponding
comprehension questions from the Qualitative Reading Inventory-4. One story was used as a baseline measure. Three graduate students independently identified keywords, defined as “words central to understanding the meaning of the reading passage” (Burns et al., 2011, p. 244). Words appearing on all three lists were chosen as keywords. The number of keywords for each passage ranged from three to four. During the intervention, the keywords were presented to the students on flashcards using the Incremental Rehearsal method. Students were introduced to the keywords, asked to orally restate each word, and two students were asked to use each word in a sentence. Each keyword was then rehearsed at a ratio of one keyword to nine known words. In this case, the known words were taken from a fifth grade word list. On the baseline story, students answered an average of 2.95 comprehension questions correctly. After the keyword pre-teaching intervention, students answered an average of 4.89 comprehension questions correctly, a significant difference.

**During reading and post-reading.** Comprehension monitoring before and after reading is another skill that often needs to be explicitly taught to struggling readers. When students are able to monitor their understanding of a text while reading, they are better able to understand why they might be struggling with a text and better employ strategies to adjust for their lack of understanding (Boardman et al., 2008). For example, if a student is struggling to understand a text due to an unfamiliar vocabulary word, the student might first determine if enough context clues in the passage exist to decipher the meaning of the word. If enough context clues are not available, the student might look up the word in a dictionary then reread the sentence once they understand the word.
Teaching students to generate their own questions about a text while reading can be an effective strategy to increase comprehension. Questioning allows students to be actively engaged with the text and helps promote the activation of prior knowledge while reading (Boardman et al., 2008). Rosenshine, Meister, and Chapman (1996) reviewed the evidence of 26 studies that involved direct instruction to students on how to generate questions while reading. Overall, the studies showed that teaching students to generate questions while reading yielded a median effect size of 0.36 when a standardized test of comprehension was used and a median effect size of 0.86 when a comprehension test developed by the experimenter was used. Furthermore, the two most frequent procedures used for teaching students questioning were shown to be the two most effective procedures. The first procedure is known as “signal words” in which students are given a list of words that would begin a question such as who, what, when, where, why, and how. The teacher models how to generate different types of questions from the list of words. The second most effective procedure involves providing students with generic questions to apply to texts. For example, “What is the main idea of the passage?” or “How does this passage relate to what I already know?” Both of these strategies are fairly simple to use and are easily applicable to any text that a student might need to read.

Summarization encourages effective organization and consolidation of information, which is a critical piece to comprehending large amounts of text (Boardman et al., 2008). Summarization of lengthy texts can be difficult for students who are unfamiliar the topic of the text (Goldman, 2012). In summarizing, students must be able to identify the main idea of a text, pull out key information, and combine that information in a coherent manner. Graham and Herbert (2010) conducted a meta-analysis of 19
studies to determine the effectiveness of summarization, specifically written summarization, on students’ reading performance. Summary writing showed positive effects in 17 of the 19 studies with an average weighted effect size of 0.52. These studies used a variety of summarization techniques including having students write a one-sentence synopsis, write a structured outline of a passage, summarizing the main idea of each paragraph, delete trivial information and create graphic organizers of significant information from a text. Boardman et al. (2008) stress that, whatever specific summarization technique is used, students must be specifically taught the technique, including modeling, practice, and feedback.

**Discussion-based instruction.** Many literacy researchers have suggested classroom discussion as a helpful tool for increasing reading comprehension, yet there are few studies that investigate the effects of specific discussion strategies on student reading achievement. Murphy, Soter, Wilkinson, and Hennessey (2009) conducted a meta-analysis of nine empirical studies that researched discussion-based instruction with various types of text and their effects on student achievement. Overall, findings indicated that discussions of text were “highly effective at promoting students’ literal and inferential comprehension” of the text (p. 759). Research also indicated that dialogical approaches proved to be more effective for students with below average reading ability than for students with average or above average ability. Murphy et al. (2009) hypothesize that average or above average readers may already use skills necessary to comprehend texts successfully and therefore do not benefit from discussion-based interventions as much as students who struggle to comprehend.
The implementation of discussion-based strategies has also been shown to increase motivation and positive attitudes towards reading in adolescents. In a study by Whittingham and Huffman (2009), 60 middle school students were randomly assigned to weekly, semester-long small group book clubs. Interns from a local university were assigned to each group to read the adolescent books and discuss them with the students. A survey addressing the students’ attitudes toward reading was administered on the first and last day of the book club. Participants were assigned books based on their reading level. During the book club sessions, the adult of the group modeled and encouraged book talks while also displaying their own enthusiasm for reading. Results of the pre- and post-club survey suggested that participation in the book club had a positive effect on the attitudes about reading of students who showed an initial resistance to reading.

**Content-based instruction.** Adding meaning and purpose to educational tasks is an important part of student engagement. Content-based instruction aims to apply reading to answer questions and solve problems in a particular discipline. This approach offers a purpose for reading in that it gives necessary information that the student needs to address the question or problem within the discipline (Goldman, 2012). Expressing the knowledge that they have gained from reading in various ways causes students to engage with and think more critically about what they have read (Hartman & Hartman, 1993). For example, in a history class, students might be asked to write a diary entry of an individual from a historical time period after reading several narrative and expository pieces about that time period.

Although there are less empirical studies involving content-based instruction than other instruction methods, studies that have been conducted show positive results.
(Goldman, 2012). In a study conducted by Geier et al. (2008), researchers examined the effect of teaching a science curriculum through content-based instruction, referred to as inquiry based instruction in this study, on seventh and eighth grade students’ state standardized science test scores. The curriculum was designed as 8- to 10-week units in which students explored science concepts in the context of research questions. Unit questions investigated in this study included: (a) What is the quality of air in my community? (b) What is the water like in my river? (c) Why do I need to wear my helmet when I ride my bike? Questions and research were applied to the students and their community to give a sense of purpose to their learning. During the first year of the curriculum implementation, students who were exposed to the curriculum outperformed students who were not exposed to the specialized curriculum on the standardized state science test by 14%, corresponding to a moderate effect size of 0.44, suggesting content-based instruction is a useful strategy.

**Various Strategies to Improve Adolescents’ Reading Abilities**

Explicit instruction in content area reading and the use of specific comprehension strategies to improve literacy skills is rarely enough to resolve literacy concerns at the middle and high school levels. Pitcher et al. (2007) recommended a variety of literacy strategies for adolescents: (a) find ways to incorporate the multiple types of literacy that students are engaging in outside of school into classroom instruction, (b) model reading enjoyment, (c) use a variety of engaging activities such as book clubs and read-alouds into classroom instruction, (d) include a wide array of reading options in the classroom, and (e) allow for choice in reading materials. For this literature review, some of those strategies and others will be briefly reviewed, specifically, summer programs, motivation
and engagement, supportive learning environments, and parent and community involvement.

**Summer programs.** Organized help outside the classroom from teachers, peers, or community volunteers can help struggling students succeed in a college preparatory curriculum (ACT Inc., 2005; Barth, 2003). Recently, summer and afterschool programs have demonstrated a successful way to support students’ academic achievement (Center for Summer Learning, 2007). In a study conducted by Mallette et al. (2009) designed to explore the benefits of a summer literacy program, 30 seventh and eighth grade students were chosen to participate in the summer literacy program. All students in the study had been identified for retention based on the school board policy of having at least three failing grades in core subjects. The summer literacy program consisted of two, 2-hour blocks of literacy instruction each day with lunch and recreation time in between the blocks of instruction. Students attended the program three days a week for six weeks. The literacy instruction, consisting of researched based reading strategies, was administered by graduate students. After the six-week program, 27 students completed the program, all of whom were promoted to the next grade based on the success of the program. Students made significant gains on the pre- to the post-test measure. The average normal curve equivalent scores significantly increased on the post-test resulting in a moderate effect size of .43. Additionally, qualitative data suggested that students’ self-reports regarding their reading abilities and feelings about school in general increased throughout the summer program.

Summer programs serve to not only supplement and strengthen students’ reading abilities, but also serve as an opportunity for students to make connections with teachers.
in a more flexible environment in which individual student choices and interests with respect to reading material can be heard. Engaging students in literacy activities with reading material that interests them is a key aspect of motivating students to read, in and out of the school setting (Center for Summer Learning, 2007).

**Motivation and engagement.** Instilling self-directed motivation for learning is imperative in the middle and high school years as this is an important characteristic for succeeding in secondary education and many careers. Adequate reading and comprehension skills are not enough for success in the secondary grades. In the later grades, students become less motivated to read for various reasons including lack of engaging material, lack of incentive, and increased difficulty of the material’s content. Struggling readers are even more likely to disengage from reading due to their inability to gain success from the task (Ambe, 2007; Biancarosa & Snow, 2006).

Based on an extensive survey and interview of 384 adolescents regarding motivation for reading, Pitcher et al. (2007) found that students define reading as a strictly academic and school-based activity. Many of the students interviewed expressed that they were poor readers or simply did not enjoy reading. When asked about reading activities outside of school, the same students often revealed motivation and ability to read in a variety of contexts (e.g., internet articles, e-mails, magazines, etc.). Based on the pattern of interview responses, Pitcher et al. (2007) emphasized the need to increase adolescents’ motivation to read. Similar findings by Smith and Wilhelm (2004) suggest that a lack of confidence in reading ability is related to a lack of motivation to read. Survey data from middle and high school students showed that students choose to participate in activities in which they are confident in their abilities. The majority of
students indicated that teachers did not help to develop their ability to successfully interpret complicated texts before assigning readings from the texts. The researchers indicate that proper support and scaffolding of reading strategies would be a step toward making students feel successful in the task of comprehending literacy and therefore motivating students to read assigned texts (Lesaux, Harris, & Sloane, 2012; Smith & Wilhelm, 2004).

Allowing for student choice within a lesson is another way to increase student motivation and engagement. Teachers can help students choose highly engaging reading material that is of interest to the student and on their reading level. Lessons and material that are relevant to the students’ lives and interests are more likely to keep the students interested in the instruction as well (Biancarosa & Snow, 2006).

**Supportive learning environment.** Effective schools maximize student progress by creating an atmosphere of organization, safety, and respect (Leithwood, Harris, & Strauss, 2010). This is achieved by generating explicit rules of the ways in which member of the learning communities should conduct themselves. It is more effective to define desirable behaviors as opposed to undesirable behaviors. Students should be rewarded for desirable behaviors and understand the consequences for breaking the rules. It is also necessary for teachers to model the desirable behaviors (Kirk & Jones, 2004; Shannon & Bylsma, 2007). In a study conducted by Gillen, Wright and Spink (2011), researchers administered questionnaires to 116 adolescent students to determine what factors students perceive as significant in creating a positive learning climate. The results of this research indicated several important factors in students’ perceptions of a positive learning climate including: (a) a well-organized, comfortable learning environment, (b)
having the ability to choose the peers with whom they collaborate, (c) having input into the content of their learning and (d) an effective classroom reward system.

**Parent and community involvement.** Schools are more likely to be successful if they are situated within a community in which everyone feels partial responsibility to educate students. Local colleges and universities, social service agencies, and youth organizations can all play a role in the educational process (Darling-Hammond & McLaughlin, 2011; Shannon & Bylsma, 2007). High schools can work with local colleges and universities to create advanced classes and college transition classes. Local colleges can also assist schools with research on best practices. High schools can collaborate with neighborhood-based youth organizations to create educational after school and extracurricular activities that are aligned with the students’ interests (Darling-Hammond & McLaughlin, 2011).

Shannon and Bylsma (2007) describe a number of factors related to parent involvement and successful schools. First, successful schools have also been shown to have a greater amount of parental involvement than the average school. Schools can develop incentives for parents to attend evening or weekend educational seminars. Second, they discuss research that shows students will value education more if they have parents who also value education. Third, treating parents as partners in the academic decisions of their children encourages parents to support the education of their children. Thus, when the school, parents, and child are all working toward a specific educational goal, the child is more likely to succeed academically.
Need for the Study

As previously stated, there exists a deficit in research regarding the effects of professional development on student achievement. This is especially true when addressing the literacy achievement of middle and high school students. Embedded professional development is a potentially effective method of training content area teachers in effective literacy instruction for middle and high school students. This study will outline a model of embedded professional development used during a summer reading program and measure the short-term growth in reading achievement.

This study measures the impact that embedded professional development has on student reading achievement through the administration of The Gates-MacGinitie Reading Tests, Fourth Edition (GMRT) at the beginning and end of the Summer Reading Academy. Mean raw scores are compared to determine if students significantly improved in their reading achievement over the four-week period. Additionally, this study looks at the effects of teacher integrity of implementation on the overall reading achievement scores of students in each teacher’s class. Teachers were asked to fill out a daily integrity check consisting of two prompts. Answers were coded and the mean score for each teacher was correlated with the mean difference of the Total raw score of the GMRT for their class of students to determine if any effect is present.
Method

Participants

Participants of this study initially consisted of 100 public middle and high school students. There were 37 seventh-grade participants (36%) and 63 ninth-grade participants (62%). The initial sample consisted of a greater number of males (61%) than females (39%). Students were selected to receive an invitation to the Summer Reading Academy based on the Measures of Academic Progress (MAP, Cizek, n.d.) scores. The MAP is administered by the school district at the end of each school year. The MAP is a computer-based, individualized assessment used to measure student achievement in five academic areas. Students who scored below the 50th percentile in the area of reading were invited to participate in the Summer Reading Academy. Of the 100 students who signed up for the Summer Reading Academy, eight students did not complete the program or attend the days when the post-test was administered. These eight students consisted of two seventh-grade males, two ninth-grade males, and four ninth-grade females. The focus of the study is on the 92 students who attended the 2011 Summer Reading Academy in its entirety and for whom pre-and post-test scores were obtained. The final sample includes 34 seventh-grade participants (37%) and 58 ninth-grade students (63%). The sample consisted of a greater number of males (62%) than females (38%).

To teach the students of the Summer Reading Academy, 19 teachers were chosen based on administrator invitation. The participating teachers were from varying disciplines and taught varying grade levels. The participating students were assigned to participating teachers based on MAP scores so that each class consisted of students with similar grade equivalent scores.
Measures

The Gates-MacGinitie Reading Tests, Fourth Edition (GMRT, MacGinitie, MacGinitie, Maria, & Dreyer, 2000) is a norm-referenced group reading achievement test. The assessment consists of two forms, S and T, to allow for the measurement of progress. Subtests vary depending on grade level. Level 7/9, the most appropriate for students in seventh, eighth, and ninth grades, consists of two subtests: Vocabulary (45 items) and Comprehension (48 items). The Vocabulary subtest measures reading vocabulary. The student is presented with a word used in a brief phrase that is not intended to provide context clues for meaning. The student is then prompted to choose the word or phrase that shares the closest meaning with the initial word. The Comprehension subtest measures the ability to understand fiction and nonfiction prose. The student is presented with a passage that is reflective of schoolwork and recreational reading. The multiple-choice questions ask for literal understanding or require the student to make inferences about what was read. The test yields a normal curve equivalent, percentile rank, stanine, grade equivalent, an extended scale score for each subtest, and a combined total score.

The standardization of the GMRT was conducted on a stratified random sampling of 65,000 kindergarten through twelfth grade students during the fall of 1998 and the spring of 1999. Alternate form (Forms S and T) correlations for the total test scores were at or above .90 except for grade 9 (.88) and grade 11 (.81). The reliability coefficients for the total test and subtest internal consistency were at or above .90 for all levels. Construct and concurrent validity were not specifically addressed in the technical manual. Test
developers referred to the similarities of the GMRT Third Edition and the strong correlation between the GMRT Third Edition and other reading tests.

The professional development providers created a daily integrity check form for the teachers to complete on a daily basis. The form simply consisted of two items to assess their ability to follow the daily schedule and implement the lesson plan correctly. Teachers respond to those items on a 4-point Likert scale. The form also contained a section where the teacher could make comments.

Procedure

Prior to the beginning of the Summer Reading Academy, the participating teachers attended three, daylong professional development sessions led by a professor in literacy. The professional development sessions addressed the overall structure and content of the Summer Reading Academy, the need for literacy instruction for adolescents, and researched-based reading strategies (see Appendix A for the names of the strategies). Students were placed in classes by grade and MAP score. Class sizes ranged from two to eight students per teacher. During the four-week Summer Reading Academy, the teachers met every week with professional development providers to address individual concerns with the application of the strategies.

Teachers were required to follow daily lesson plans which were accessible on the Summer Reading Academy website. Additionally, each teacher was required to produce and share one lesson plan. Each lesson plan centered on a different reading strategy. Teachers were provided with a lesson plan template (see Appendix B).

Each daily lesson plan began with a 5-minute welcome time, allowing teachers to outline the schedule for the day. Teachers then directed a 15 minute Word Play in which
a word or text-based game was played with the students. Examples of Word Play used include crossword puzzles, pictograms, and riddles. The purpose of beginning the day with Word Play was to actively engage the students while increasing vocabulary, activating prior knowledge, and facilitating critical thinking skills. The reading strategy for that day was then introduced to the students. Teachers were instructed to explicitly define the strategy and the benefits of the strategy. A short video or game was often provided as an aid to the introduction of the strategy. After the strategy was introduced, teachers would facilitate the activation of prior knowledge. Discussion and activities to accomplish this were directly related to the main activity for the day. A vocabulary lesson using words that would be found in the main activity was then completed. A PowerPoint presentation was provided in which daily vocabulary words were listed with definitions, used in a sentence, and shown with a picture representation. Students would then be presented with a text with which to use the daily reading strategy. Teacher modeling, scaffolding, and independent student practice of the strategy was used to complete the activity.

A class book club was conducted during the last 30 minutes of each day. The professional development facilitators chose 10 young adult books, thought to be of high interest to the students. The books were assigned to one of three reading levels: seventh grade low, seventh grade high/ninth grade low, ninth grade high. On the first day of the Summer Reading Academy, teachers introduced the appropriate options to their classes. After the book choices were introduced, students were instructed to write down their choice and a short explanation for their choice. To enhance motivation, books were
chosen by each class through popular vote. Each day during the last 30 minutes of class, students read silently or the class discussed the book as a group.

Data Collection

Pre-test GMRT data were collected on the second day of the Summer Reading Academy. Students who were absent or did not complete the test on the second day completed the GMRT on the third day. Likewise, post-test GMRT data were collected within the last two days of the Summer Reading Academy. Students were administered the computer-based test with their respective teachers overseeing the test administration.

Teachers were asked to complete the daily integrity check form (see Appendix B) at the end of each day to assess their ability to implement the schedule and lesson plan that day. Teachers were encouraged to add comments and concerns on the integrity check form to allow the professional development facilitators to address the areas of concern. The integrity check form could be submitted online or in hard copy form.

Western Kentucky University’s Human Subjects Review Board approved this project and all procedures for data collection (see Appendix D).

Data Analysis

To answer the research question regarding the effect of embedded professional development on student reading achievement, the students’ pre-and post-test GMRT raw scores and grade equivalent scores were determined and tested for statistical significance using a 2 X 2 mixed model ANOVA. This analysis was performed for the Vocabulary, Comprehension, and Total grade equivalent scores. To answer the research question regarding the effects of teacher integrity of implementation on student reading achievement, intervention integrity information was compiled and coded. Intervention
integrity was self-assessed by the teachers by rating two statements: (a) I was able to follow the daily schedule accurately, and (b) I was able to implement the lesson plan accurately. Available responses were on a Likert scale where 1 = not at all, 2 = some deviation, 3 = fairly well, and 4 = very well. The intent was for the teachers to complete the integrity check each day of the summer reading academy. Mean scores for each prompt were calculated for each teacher for the days they completed the integrity check. Additionally, the mean differences of the GMRT pre- and post-test raw scores were computed for each teacher’s class of students. Those mean differences were correlated with the teachers’ integrity check scores.
Results

The first research question sought to determine the impact of an embedded professional development program on student reading achievement. Pre-and post-test GMRT data were available for 92 students. The mean raw scores were determined for all students at pre- and post-test GMRT administrations. Table 1 presents the raw score means, standard deviations, and the mean increases from pre- to post-test administrations for descriptive purposes. The results indicated that mean raw scores increased slightly for all students in all areas except the Comprehension test for the ninth grade students and total sample, in which there was a slight decrease from pre-test to post-test raw scores.

The mean grade equivalent scores were also determined for all students at pre- and post-test GMRT administrations. Mean increases in grade equivalent scores from pre- and post-test for all students were also computed. These results are presented in Table 2 for descriptive purposes.

To evaluate the significance of the differences, 2 (time: pre/post) by 2 (grade: 7/9) mixed model ANOVAs were conducted separately for GMRT Vocabulary, Comprehension, and Total scores. There were no significant interaction effects, as expected. The grade equivalent score increases were 0.42 for Vocabulary, 0.24 for Comprehension, and 0.25 for the Total test. There was a statistically significant main effect for time (i.e., pre-test to post-test) only for the Vocabulary test $F(2, 90) = 5.60, p = .020$. The main effects for time for the Comprehension test, $F(2, 90) = 2.08, p = .152$, and the Total test, $F(2, 90) = 3.09, p = .082$, were not significant.

Reading skills are developmental in nature and the focus of the instructional activities was designed for students performing below grade level. Given some of the students were actually at or above grade level, according to the pre-test GMRT grade
Table 1

*Mean Raw Scores on the GMRT for All Students*

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test</th>
<th></th>
<th>Post-Test</th>
<th></th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Seventh Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>16.47</td>
<td>6.10</td>
<td>17.12</td>
<td>6.41</td>
<td>0.65</td>
</tr>
<tr>
<td>Comprehension</td>
<td>19.29</td>
<td>5.60</td>
<td>19.65</td>
<td>5.25</td>
<td>0.36</td>
</tr>
<tr>
<td>Total</td>
<td>35.76</td>
<td>10.34</td>
<td>36.76</td>
<td>10.20</td>
<td>1.00</td>
</tr>
<tr>
<td>Ninth Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>19.10</td>
<td>6.97</td>
<td>20.38</td>
<td>8.51</td>
<td>1.28</td>
</tr>
<tr>
<td>Comprehension</td>
<td>24.48</td>
<td>8.23</td>
<td>24.12</td>
<td>7.22</td>
<td>-0.36</td>
</tr>
<tr>
<td>Total</td>
<td>43.59</td>
<td>14.25</td>
<td>44.50</td>
<td>14.51</td>
<td>0.91</td>
</tr>
<tr>
<td>Combined Grades</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Vocabulary</td>
<td>18.13</td>
<td>6.75</td>
<td>19.17</td>
<td>7.92</td>
<td>1.04</td>
</tr>
<tr>
<td>Comprehension</td>
<td>22.57</td>
<td>7.76</td>
<td>22.47</td>
<td>6.88</td>
<td>-0.10</td>
</tr>
<tr>
<td>Total</td>
<td>40.70</td>
<td>13.43</td>
<td>41.64</td>
<td>13.55</td>
<td>0.94</td>
</tr>
</tbody>
</table>
Table 2

*Mean Grade Equivalent Scores on the GMRT for All Students*

<table>
<thead>
<tr>
<th></th>
<th>Pre-Test Mean</th>
<th>SD</th>
<th>Post-Test Mean</th>
<th>SD</th>
<th>Difference</th>
</tr>
</thead>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>5.23</td>
<td>1.69</td>
<td>5.47</td>
<td>1.97</td>
<td>0.24</td>
</tr>
<tr>
<td>Comprehension</td>
<td>5.10</td>
<td>1.19</td>
<td>5.35</td>
<td>1.23</td>
<td>0.25</td>
</tr>
<tr>
<td>Total</td>
<td>5.36</td>
<td>1.22</td>
<td>5.51</td>
<td>1.40</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Ninth Grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary</td>
<td>6.03</td>
<td>2.18</td>
<td>6.55</td>
<td>2.84</td>
<td>0.52</td>
</tr>
<tr>
<td>Comprehension</td>
<td>6.36</td>
<td>2.21</td>
<td>6.59</td>
<td>2.22</td>
<td>0.23</td>
</tr>
<tr>
<td>Total</td>
<td>6.40</td>
<td>2.08</td>
<td>6.71</td>
<td>2.36</td>
<td>0.31</td>
</tr>
</tbody>
</table>

equivalent scores, a post-hoc analysis was conducted to exclude those students from the analysis. Students included in the post-hoc analysis were those with a grade equivalent score at least 0.5 points below their grade placement on the Vocabulary, Comprehension, or Total test. This manipulation of the sample led to 13 to 14 fewer students in each of the three analyses.

The same 2 (time: pre/post) by 2 (grade: 7/9) mixed model ANOVAs were used for the analysis of the GMRT Vocabulary, Comprehension, and Total scores. This time, the grade equivalent score increases were 0.41 for Vocabulary, 0.49 for Comprehension, and 0.33 for the Total test. There were statistically significant main effects for time for all
tests. Specifically, the ANOVA results were: Vocabulary $F(2, 76) = 4.53, p = .037$; Comprehension $F(2, 77) = 8.17, p = .005$, and Total $F(2, 77) = 4.73, p = .033$.

To address the second research question regarding the effects of the teachers’ intervention integrity on student achievement, the mean integrity rating for each teacher on both statements from the integrity check and the mean difference in GMRT Total scores for each class was determined. One teacher did not fill out the questionnaire for any day during the Summer Reading Academy. Therefore, integrity data were available for 18 of the 19 teachers. Pearson correlation coefficients were determined to test for statistical significance. The results did not indicate a statistically significant correlation ($r = .281, p = .258$) between Total raw score increases and teacher integrity scores on the first statement (i.e., “I was able to follow the daily schedule accurately”). In addition, the correlation ($r = .267, p = .285$) was not significant for the second statement (i.e., “I was able to implement the lesson plan accurately”). The lack of statistical significance was likely due to the restriction of range of the responses to the integrity checks. For the first question, 87% of the responses were 3s and 4s on the 4-point scale. Similarly, on the second question, 89% of the responses were 3s and 4s. Thus, the daily integrity check form was not useful to address this research question and the effect of teacher instructional integrity on student achievement outcomes was not able to be determined.
Discussion

Statement of Major Findings

The current study set out to examine the effects of embedded professional development in the form of a summer reading academy on student reading achievement in seventh and ninth grade students. While there is extensive literature on both the benefits of teacher professional development and researched-based reading interventions, there is little research demonstrating the effects of teacher professional development on student reading achievement, especially at the secondary level. Demonstrating the effects of teacher professional development on adolescent reading achievement has the potential to show an effective way to utilize research based reading interventions with struggling adolescent readers.

Students in this study were invited to participate in the Summer Reading Academy based on the reading scores of the Measures of Academic Progress (MAP), an individual achievement assessment administered by the school district at the end of each school year. To evaluate the effects of the professional development training on students’ reading ability, reading achievement was measured at the beginning and end of the summer reading academy with the Gates-MacGinitie Reading Tests, Fourth Edition (GMRT).

The school district’s administrators selected the 19 teachers who participated in the Summer Reading Academy. The professional development training, as recommended by Darling-Hammond and Richardson (2009), focused on student learning and was able to be directly applied during the Summer Reading Academy. Teachers were asked to fill out daily integrity checks to reflect on their own implementation.
The first research question addressed the effect of embedded professional development on student reading achievement. When grade equivalent scores were analyzed, students demonstrated a significant increase from their pre-test Vocabulary scores to their post-test Vocabulary scores. The 0.42 grade equivalent increase suggests the students made almost half a year’s growth in just four weeks. Although not statistically significant, the students made one-fourth of a year’s growth on Comprehension and the Total test in the same four-week period.

The focus of the intervention was on below-average students. When the higher-level students were taken out of the sample, statistically significant increases in grade equivalent scores were shown for Vocabulary (0.41), Comprehension (0.49), and the Total test (0.33). These results suggest that the Summer Reading Academy was effective for students performing below grade level. The increases of one-third to one-half of a grade level may seem minimal but the students made, in essence, a gain of three to five months in less than four weeks. This is particularly impressive because students often regress with academic skills over the summer months (Reece, Myers, Nofsinger, & Brown, 2000).

The students in this sample made gains similar to those demonstrated by the seventh and eighth grade students in the summer reading program reported by Mallette et al. (2009). Mallette et al. reported normal curve equivalent scores, so it is difficult to make direct comparisons between their study and this one. The Mallette et al. (2009) study consisted of a four hour per day program, three days a week, for six weeks while the Summer Reading Academy in this study was three hours per day for four weeks. The slight variation in instructional time did not appear to make a difference in results.
Significant gains were found in the current study even though norm-referenced achievement tests like the GMRT might not be sensitive enough to pick up on short-term gains made by the students. Norm-referenced achievement tests, in general, are only designed to provide scores on students’ general relative academic standing based on a sampling of academic skills. As stated by Good and Jefferson (1998), achievement tests “are not sensitive to gradual, but important, improvements in student performance. It is not possible, for example, to determine whether the student has improved in performance from week to week” (p. 68). Furthermore, the use of an achievement test to measure students’ improvement in academic skills relies on the assumption “that the test takers have had the opportunity to learn the material covered by the test” (Brown, 1976, p. 229). No attempt was made in this study to determine if the content of the GMRT matched the skills taught in the summer reading academy. In future research, the addition of measures that are designed specifically for short-term progress monitoring should be considered.

The second research question addressed the effect of teacher integrity of implementation on the overall reading achievement scores of students in each teacher’s class. No significant correlations were found between the mean score of either integrity check prompt (i.e., I was able to follow the daily schedule accurately; I was able to implement the lesson plan accurately) and the mean increase of the GMRT Total raw score for each teacher’s class. These results could be interpreted to suggest that teachers’ perceived ability to implement the program correctly had no effect on student achievement scores; however, the ratings on the form did not provide enough variance to adequately address this research question. Furthermore, each teacher only had two to
eight students, so a statistical analysis of this issue was not likely to demonstrate any statistically significant results.

Limitations

The analyses in this study used grade equivalent scores. It is noteworthy to point the issues when using grade equivalent scores. Grade equivalent scores are derived from raw scores. A grade equivalent score reflects the mean raw score for a particular grade level of students in the norming sample of a test. For example, if a seventh grader receives a raw score of 30 on a test and the average score (in the norming sample) for students during the sixth month of their fourth grade year is 30, the student has a GE of 4.6. Grade equivalent scores are often used to measure aptitude or growth on achievement tests as they are simple to understand. Grade equivalent scores do have limitations that are important to note. One constraint in using these types of scores is that grade equivalent scores do not demonstrate equal variability between grade levels. There tends to be less variability in the scores of younger children since they have been introduced to fewer academic concepts, leaving less room for an array of skill levels. Conversely, the standard deviation between grade levels tends to increase in higher grades (Ramos, 1996). Another issue in using grade equivalent scores is that, because these scores reflect average raw scores of a sample of students on a specific test, grade equivalent scores should not be interpreted to mean that students do or do not meet the grade level curriculum requirements of an entire academic subject. Thus, while some statistically significant differences were found using grade equivalent scores, such scores may not be an ideal measure to use for assessing progress. Clearly, having an appropriate measurement system and scores will be important to assess summer reading programs in future studies.
One major limitation of the study is the use of student MAP scores for identification and student pre- and post-test GMRT scores to determine effectiveness of the program. There are no data to suggest that the MAP and GMRT have a significant correlation to each other. The difference in tests may be one of the reasons that 13 – 14 students scored at or above grade level on the three sections of the GMRT after being identified as below grade level by the MAP. In future research, it may be advantageous to follow up on student MAP scores during the next school year to determine student growth. This is especially important because long-term growth will be a better indicator of whether students are generalizing the strategies that they learned in the Summer Reading Academy in a way that sustains growth in reading. Sustained reading skills are the goal of such reading programs and this type of information cannot be gleaned by short-term measures of reading achievement growth.

The absence of a control group is another limitation of the current study. While all students in seventh and ninth grade scoring below the 50th percentile on the MAP were invited to attend the Summer Reading Academy, only 100 students were signed up to attend. Adding a sample of students who are struggling in reading based on the MAP scores but who declined to attend the Summer Reading Academy would be advantageous. A control group would provide a direct comparison to the experimental group and provide powerful documentation of a summer reading program’s impact on students’ reading abilities for both the short term and long-term. If students who attend the Summer Reading Academy show significantly more growth on the MAP from one year to the next than the control group, then it will be clear the Summer Reading Program
was the reason for their improvements. Questions about measurement error and regression to the mean will be addressed.

Attendance may have been another factor in some students’ lack of significant progress. Student data were used if the student was present during the pre- and post-testing days. However, attendance of each student was not provided and therefore not taken into account in the analysis of data. In future research, significant absences from the program should be taken into account.

Although teachers were asked to submit a daily integrity check, follow-through was inconsistent. Additionally, teachers rated themselves on their ability to follow the agenda and lesson plans each day and, therefore, such self-ratings may have been biased. One way to address this potential bias in the future would be to subject the teachers to random observations by professional development providers to objectively determine if the interventions are being implemented as directed. To promote objectivity, a scoring rubric could be made for each reading strategy. In addition, a combination of observations conducted by the profession development providers along with student reports of teacher behavior could be used throughout the following school year to measure persistent, long-term change in teacher behavior. Although the current study only set out to measure integrity of implementation during the Summer Reading Academy, measuring long-term changes in the teachers’ behaviors regarding literacy instruction would speak to the success of the professional development model. As was done in this study, measuring student growth over four weeks was a very indirect measure of the success of the professional development activity.
There is significant evidence that shows that student motivation and self-confidence in reading ability are important factors in getting students to read (Biancarosa & Snow, 2006; Smith & Wilhelm, 2004). An additional component for future research should be a self-report for students regarding their attitudes and confidence toward reading. Administering a self-report instrument at the beginning and end of the Summer Reading Academy could give researchers valuable information regarding the effects of the book club aspect of the program. Pinpointing which aspects of the program students felt had the most impact on their achievement and motivation would help drive future variations of the program. As mentioned previously, long-term change in both teacher and student behavior should be addressed in future research. Follow-up questionnaires during the next school year would help to determine if students sustained a long-term change in their motivation and attitudes toward reading.

**Conclusion**

In conclusion, the present study adds to the minimal research of teacher professional development on student reading achievement by demonstrating some positive effects of an embedded professional development model, despite the limitations in measuring both student and teacher growth. Including long-term measures of student achievement and student and teacher behavior in future variations of the current study would provide researchers with a better understanding of how such a model would affect achievement long-term. Additionally, this study provides a professional development framework in conjunction with researched-based techniques to improve the literacy skills of struggling adolescent readers. This professional development framework differs from the traditional professional development seminars that teachers are often subjected to.
during the school year in that it embeds the professional development within a program, allowing teachers to apply and reflect on their ability to implement the concepts. This design makes the benefits of this type of program twofold: teachers receive embedded professional development in literacy while struggling readers receive supplementary instruction to improve their reading skills.
Appendix A

Names of Reading Strategies

1. Turn and Talk
2. Read with a Question in Mind
3. Text Annotation
4. Text Coding
5. Sketching Through the Text
6. Two-Column Notes
7. Reading a Visual Image
8. Think Aloud
9. Pair Reading
10. Save the Last Work for Me
11. Conversation Questions
12. Support Your Position
13. Written Discussion
14. Text-on-Text
15. Alternative Perspective Writing
16. Point of View Annotation
17. Arguing Both Sides
18. Where Do You Stand?
19. Gallery Walk
20. Carousel Brainstorming
21. Tableaux
22. Quotation Mingle
23. Jigsaw
Appendix B

Daily Lesson Plan Template

Date: __________________

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Notes to Self:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 minutes</td>
<td>Welcome</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Logistics, seating, overview for the day</td>
<td></td>
</tr>
<tr>
<td>20 minutes</td>
<td>Word Play</td>
<td></td>
</tr>
<tr>
<td>10 minutes</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>25 minutes</td>
<td>Introduction of Strategy – p. ____ <em>Texts and Lessons</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Activate Schema / Build Background</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Video (possibility)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Poem/song (possibility)</td>
<td></td>
</tr>
<tr>
<td>25 minutes</td>
<td>Vocabulary</td>
<td></td>
</tr>
<tr>
<td>45 minutes</td>
<td>One Page Wonder:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Title: “_____________” p. ____ <em>Texts and Lessons</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STRATEGY: __________ p. ____ <em>Texts and Lessons</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Writing or post-reading activity</td>
<td></td>
</tr>
<tr>
<td>45 minutes</td>
<td>Book club selections – students should</td>
<td></td>
</tr>
<tr>
<td></td>
<td>read silently at least 3 days each week.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A portion (or all if desired) of this</td>
<td></td>
</tr>
<tr>
<td></td>
<td>time can be spent in book club groups 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>days a week.</td>
<td></td>
</tr>
<tr>
<td>5 minutes</td>
<td>Ticket Out (Strategy summary in their own</td>
<td></td>
</tr>
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<td></td>
<td>words)</td>
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Appendix C

Daily Integrity Check

NAME: ____________________________

Date: ______________________________________

Self-Ratings of Today’s Activities.
It is important to give an accurate appraisal of the daily activities in order for us to assist teachers with areas of concern. Circle the appropriate description for each of the two items.

1. I was able to follow the daily schedule accurately.
   Not at all   Some deviation   Fairly well   Very well

2. I was able to implement the lesson plan accurately.
   Not at all   Some deviation   Fairly well   Very well

Comment on any difficulties implementing the schedule or lesson plan:
Appendix D

Human Subjects Review Board Approval

Dr. Carl Myers
Dr. Pam Petty
Psychology/Teacher Education
WKU

Dr. Carl Myers
& Dr. Pam Petty:

Your research project, Summer Reading Academy for Secondary Schools, was reviewed by the IRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects' welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.

1. In addition, the IRB found that you need to orient participants as follows: (1) signed informed consent is not required; (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.

This project is therefore approved at the Exempt from Full Board Review Level.

2. Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address. Please report any changes to this approved protocol to this office. A Continuing Review protocol will be sent to you in the future to determine the status of the project. Also, please use the stamped approval forms to assure participants of compliance with The Office of Human Research Protections regulations.

Sincerely,

Paul J. Mooney, M.S.T.M.
Compliance Manager
Office of Research
Western Kentucky University

cc: HS file number: Myers HS12-007
References

ACT Inc. (2005). *On Course for Success: A Close Look at Selected High School Courses That Prepare All Students for College and Work.* Iowa City, IA.


