

**THE EFFECT ON DEVELOPMENTAL COLLEGE STUDENTS' INDEPENDENT
READING RATES AFTER IMPLEMENTING AN INTERVENTION OF GUIDED
READINGS USING THE READING PLUS COMPUTERIZED READING PROGRAM**

A Thesis by

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Bachelor of Arts, Wichita State University, 2005

Submitted to the Department of Curriculum and Instruction
and the faculty of the Graduate School of
Wichita State University
in partial fulfillment of
the requirements for the degree of
Master of Education

May 2011

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The following faculty members have examined the final copy of this thesis for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Master of Education with a major in Curriculum and Instruction.

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DEDICATION

To my parents, Will and Janet Ruckle; my husband, Gary; and my two sons, A.J. and Daniel

How can we help a child change from undependable to dependable,
from a mediocre student to a capable student,
from someone who won't amount to very much to someone who will count for something.
The answer is at once both simple and complicated:
We treat a child as if he already is what we would like him to become.
Haim Ginot

ACKNOWLEDGEMENTS

Wow, what a journey! The last four years have been full of new experiences which have brought me a wealth of knowledge. Many people have been instrumental in helping me achieve the goal of earning my Master's Degree. First, Jeannette Cecil, thank you for believing in me. Your confidence in me was the first step in getting me to this point. Star Gipson, I appreciate you for allowing me the opportunity to pop in your office anytime to ask questions, clarify information and bounce around ideas. Knowing you were always available made this journey so much easier. To my teaching colleague, Don Lind, I extend my gratitude. You've always been supportive and patient as you answer my many questions. To my department chairperson, Trudy Zimmerman, I thank you for the helpful editing that comes so easily to you. Locating HCC specific data was never a problem because Ruth Jenson and Mike Tonn were always just an e-mail away. Thanks for being so prompt and providing me with the data I needed. Sandy White, Sally Osner and Pat Bryant, thank you for helping input data, prepare documents and listen as I talked through my study. Your help was invaluable.

I am very appreciative to the staff of Reading Plus. Karl Hummel, I am grateful for your insight as you shared your thoughts and guided me through a different process of utilizing Reading Plus. Deb Esau, you have not only answered my many Reading Plus questions, but I feel as though I have a new friend. Reading Plus support staff, thank you for being available and always answering my technical questions via live chats and e-mails.

A special thank-you goes to my students. You are an amazing group of young men and women, and I have enjoyed getting to know you. Never forget -- reading will allow you many opportunities. You achieved success with Reading Plus in class; you can achieve success in life too!

To my thesis committee members, Kimberly McDowell, Catherine Bohn-Gettler, and Katherine Mason, I'd like to extend to you my gratitude. Your suggestions toward my research study were very valuable and insightful. A special thank-you goes to Dr. Bohn for helping me with the statistical analysis. Dr. Carroll, my thesis committee chairperson and professor, you are an amazing instructor, always modeling the traits of an excellent teacher. The positive comments you shared with me boosted my confidence and will indefinitely be imprinted in my memory.

I am ever grateful to my dear friend, Tricia Paramore. Thank you for listening patiently every time I complained throughout this tedious process. Your words of encouragement were well timed and always meaningful. I have become a better teacher of young adult students as a result of watching and emulating you.

Finally, to my wonderful family, without your love and support I would have never achieved this dream. Mom and Dad, you have both always been there for me, encouraging me throughout my life. I wouldn't want to call anyone else Mom and Dad. To my two favorite sons, A.J. and Daniel, I am so excited that all three of us are graduating in May. Congratulations on your graduations; I am proud of both of you! Gary, my dearest husband, you have no idea how much you have helped me during this quest. Your support and encouragement allowed me to focus on completing my degree. You never complained about the upheaval in our lives, and most importantly your self-taught computer skills and your handiness in dealing with technology issues saved me more times than I can count. As I receive my diploma, know that a portion of it rightfully belongs to you. Mom, Dad, Gary, A.J, and Daniel, thanks to all of you for sacrificing time with me over the last four years; now life can get back to normal!

ABSTRACT

This study investigated the best approach to increase a student's reading rate while using the computerized reading program Reading Plus. The participants were community college students enrolled in developmental reading classes. The experimental students completed guided reading lessons using a guided reading format versus the control students, who completed guided reading lessons using both independent and guided reading formats. Pre- and post-testing assessed reading levels, oral reading rates, and silent reading rates of both groups. While pre- vs. post-test scores showed increases in reading rates on three different assessment measures for both groups, these increases were not statistically significant.

PREFACE

In my position as a faculty member at a community college, I have worked with students in a variety of settings. The majority of students I encountered were low-income, first-generation or students with disabilities. As I worked with these students teaching study skills, tutoring one on one, or teaching them in my reading comprehension class, I realized that although they wanted to be successful, they did not have the skill set that would allow them much success without someone guiding them. It became my greatest desire to find various strategies they could use that would allow them to experience success. Then it became my greatest pleasure to watch as many of them slowly increased their confidence levels as they experienced each small success.

While working with the students in my Reading Comprehension I courses, I used the computerized program Reading Plus. Each semester I used the program, I became more intrigued with the way it helped my students. Through talking with Reading Plus professionals, I gleaned more and more information. During these conversations, Karl Hummel discussed his idea of how to most effectively develop a student's reading rate, which is an important part of the Reading Plus program. I was delighted to have the opportunity to work closely with Karl and the Reading Plus professionals to develop a study which investigated just that.

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LIST OF ABBREVIATIONS

ARL	Assigned Reading Level
AVL	Assigned Vocabulary Level
CBI	Computer-Based Instruction
CBM	Curriculum Based Measurement
CRT	Criterion Referenced Test
ELL	English Language Learner
FCAT	Florida Comprehensive Assessment Test
FFW	Fast For Word
G-Rate	Guided Rate
GED	General Education Diploma
HCC-AVS	Hutchinson Community College and Area Vocational School
I-Rate	Independent Rate
KBOR	Kansas Board of Regents
MS	Multi-Segment
NDRR	Nelson Denny Reading Rate
NDRT	Nelson Denny Reading Test
NRT	Norm Referenced Test
PAVE	Perceptual Accuracy/Visual Efficiency
QA	Qualified Admission
RF	Reading Fluency

LIST OF ABBREVIATIONS (continued)

RP	Reading Plus
RPA	Reading Placement Appraisal
SFA	Success For All
WA	Word Attack
WPM	Words Per Minute
WWC	What Works Clearinghouse

CHAPTER 1

INTRODUCTION

On a typical summer enrollment day, Mr. Jacobs is seeing incoming freshman students from the local high schools to help them determine their first semester college schedules. His first appointment of the day is with Ben, who graduated in the top 15% of his high school class taking college preparatory classes. Ben has decided he wants to major in secondary education. Both of Ben's parents graduated from college and have been active in his educational process since he attended pre-school. Ben decided to attend the local community college in order to save money. Following his parents' suggestion, he found out as much information as he could before meeting with his academic advisor, Mr. Jacobs. Upon meeting Mr. Jacobs, Ben informs him he would like to major in secondary education and be a high school English teacher. Ben has an idea of the courses he needs to take, and he has brought a printed list of those courses. First, Mr. Jacobs looks at Ben's ACT scores to determine Ben's course placement for English and math, and then Mr. Jacobs looks over Ben's list of courses. Together they determine a schedule of 16 credit hours, all of which will lead Ben to receive his Associate's Degree and transfer to the four-year university of his choice. The courses Ben enrolls in are English Composition I, College Algebra, Public Speaking, Psychology, Art Appreciation, and Freshman Seminar. When leaving his advising appointment, Ben promptly goes to the bookstore and purchases his textbooks.

The next appointment Mr. Jacobs has is with Charlie. This student was in the lower 25% of his graduating class, and he has not thought much about what he wants to do with his future. Due to lack of parental guidance, Charlie did not see the importance of education. Although he graduated from high school, the teachers did not have high expectations of Charlie; thus, he did just enough work to get by. Charlie has not read any part of any book since eighth grade, and as

soon as he fulfilled his math requirements, he stopped taking math classes. Like Ben, Charlie has decided to attend the local community college; however, unlike Ben, Charlie wants to go because that is what his friends are doing. When Charlie arrives for his advising appointment with Mr. Jacobs, he states that he has no idea what he wants to do. When Mr. Jacobs asks him his areas of interest, Charlie responds that he likes to play video games and hang out with his friends. Mr. Jacobs informs Charlie that he doesn't have to decide what to he wants to major in right now, but he can start working on the courses that will lead to an Associate's Degree. Before enrolling Charlie in any courses, Mr. Jacobs checks Charlie's test scores. Since Charlie did not take the ACT exam, Mr. Jacobs looks at the English, reading, and math assessment scores of the tests that are required by the college to determine course placement in lieu of the ACT exam. Based on these assessment scores, Mr. Jacobs enrolls Charlie in Basic Algebra, Basic English, Reading Comprehension, Freshman Seminar, Career and Decision Making, and Stress Management for a total of 13 credit hours. Ten of the thirteen hours will not transfer to a four-year university because they are developmental courses, which do not transfer. However, the community college requires students to take these developmental courses in order for the students to have a chance at being successful when they take regular level courses. When Charlie leaves his advising appointment, he goes straight to the local hang-out to tell his friends he is going to college. He does not make it to the book store until the second week of classes, and even then he does not buy all of his required textbooks.

The number of students like Charlie entering community colleges and universities under-prepared is rising every year. These students enroll yet lack basic skills in English, math, and reading. Community colleges across the nation are open enrollment institutions; therefore, any student who elects to attend can enroll as a student regardless of his academic achievement prior

to attending college. If students have earned a high school diploma or a general education diploma (GED), they are allowed to enroll and begin taking courses. Many students are often not academically prepared or are not motivated to attend class or do the course work when they enter college; therefore, they are unsuccessful in their classes. This leads them to drop out before their first semester is over, fail the classes they are taking, yet re-enroll the following semester exhibiting the same lack of motivation behaviors and inadequate skills, or fail their first semester and not re-enroll the following semester, therefore never making it to graduation day. These students oftentimes have no knowledge of what is expected of them as a college student. They have gotten through high school in whatever manner they were capable of figuring out, and they expect to be able to do the same thing in college. Their desire is to attend college and graduate, but their behaviors, whether motivation- or academic-related, do not lead them to accomplishing their goal.

In order for a student to succeed in college, he has to be able to read; however, many students who attend college have poor reading skills. Over the last two decades, the number of people who read in the United States is steadily declining. A survey conducted by the National Endowment for the Arts (2004) of over 17,000 people reports a decline in all of the following areas: the percentage of adults reading literature is declining; both men and women are showing declines in the amount of reading they do; the decline is occurring across various racial and ethnic groups including whites, African Americans, and Hispanics; students at all levels of education including elementary school through college graduates are showing a decline in their amount of reading; all age groups from 18 to 24 years old through 75 and older are declining; and the two youngest age groups (18-24 years and 25-34 years) are showing the greatest decline.

It is not uncommon for students like Charlie to attend an open-enrollment college or university. How can these colleges and universities meet the needs of the students who lack reading and other academic skills yet who want to begin their post-secondary education? Many colleges and universities are now offering developmental education programs or courses, including developmental reading classes to help these students.

CHAPTER 2

LITERATURE REVIEW

Since Charlie is not atypical of college students in today's world, what can be done to allow him the opportunity to be successful in college? How can Charlie's reading scores be brought up to a level that will give him a chance to pass the courses required to achieve a college degree? Will using the guided reading format in the computerized reading program Reading Plus help students like Charlie increase their reading level and their reading rate while maintaining adequate comprehension scores?

2.1 Developmental Education

The population of students attending college has increased dramatically over the last several decades. In 1950 there were approximately 2.2 million students attending college, which increased to 11.4 million in 1980, and by 2002 there were 16.5 million students attending college (U. S. Census Bureau, n. d.). A large number of students arriving on the college's doorstep are under-prepared for the typical yet rigorous college curriculum (Dotzler, 2003).

Many reasons can account for this lack of college preparedness including students who did not graduate from high school with a diploma in the typical manner, students who graduated from high school but did not go straight to college, students who may have graduated from a non-English speaking high school, or students whose high school courses did not prepare them for college (Dotzler, 2003). A variety of terms have been used to describe students or programs for students who are not prepared for college-level coursework. Some of the common phrases used to describe these students and courses are remedial, under-prepared, extra assistance, preparatory departments, and developmental (Casazza, n. d.). Payne and Lyman (as cited in Kozeracki, 2002) indicate other terms such as "preparatory studies, remedial education,

academic support programs, compensatory education, learning assistance and basic skills” (p. 84). For the purpose of this study, the terms “under-prepared students” and “developmental courses” will be used.

Lundell, Higbee, and Hipp (2005) report between high school and college there is a misalignment of what is meant by college readiness, which negatively affects under-prepared students. Students are often not ready for college because receiving a high school diploma does not necessarily mean the students are ready for college. In a survey given at a May 2004 meeting of the Twin Cities Metropolitan Higher Education Consortium Developmental Education Initiative, many of the high school and post-secondary educator respondents said high school graduation does not necessarily equate to college readiness, indicating that high school rewards attendance whereas college does not. In addition, high school students do not take enough mathematics, science, or foreign language courses, and they do little reading and writing. The biggest most powerful comment was that there needs to be better alignment of high school expectations and college readiness as well as that high school graduation standards need to be more closely related to college admissions requirements. The survey respondents indicated that students need improvement in writing, reading critically, self-motivation, self-direction, self-discipline, self-assessment, critical-thinking skills, and goal-setting; they also need to understand the culture of college. Not only did the educators indicate that graduating from high school does not always mean the students are ready for college, but many of the students responded in the same manner.

Completing college preparatory coursework in high school is very important. According to Hawkins and Clinedinst (2006), admission to most four-year colleges across the country is based primarily on a student’s academic history including the curriculum he completed in high

school, his scores on standardized tests such as the ACT or the SAT, and his overall grade point average. In a report for the Center for Civic Innovation, Greene and Forster (2003) indicate that in 2001 the high school graduation rate was 70%, but only 32% of students leaving high school had the necessary qualifications needed for admission to a four-year college.

Seeking students who are prepared for college coursework, the Kansas Board of Regents (KBOR) implemented criteria for Qualified Admissions (QA) for undergraduate students for its six state universities. “The purpose of QA is to enhance success at the university level by ensuring students are prepared for the rigors of a university education” (Academic Affairs, n. d., Qualified Admissions, para. 2).

According to Academic Affairs, the current QA for students enrolling in one of the state universities in Kansas are as follows:

Kansas residents who meet one of the following requirements are guaranteed admission to a state university.

Freshmen (fewer than 24 transfer credit hours):

- High school students
 - Graduates of accredited high schools must meet one of the following three requirements
 1. Achieve an ACT score of 21 or higher OR
 2. Rank in the top 1/3 of the class in the 7th or 8th semester OR
 3. Achieve a 2.0 or higher on the precollege curriculum
- Homeschooled students
 - Achieve an ACT score of 21 or higher
- GED graduates
 - Achieve an overall score of 2550 and a minimum score of 50 points on each subtest
- 21 and Older
 - Have a high school diploma
- Transfer Students
 - Earn a 2.0 or higher on 24 or more transfer credit hours (Academic Affairs, n. d., Qualified Admissions Curriculum, para. 1).

In December 2010, KBOR adopted even more rigorous QA standards that will affect the August 2011 incoming freshmen as these standards will have to be met when these students

graduate in 2015. These students will have additional guidelines concerning required classes they will have to complete in order to gain admittance to one of Kansas' six state universities than today's students (Academic Affairs, n. d.).

Students not meeting the QA criteria must attend a community college if they plan to seek higher education in Kansas. Community colleges are open-enrollment institutions and accept these under-prepared students, whose grades indicate that they did not do well in their high school curriculums (Cohen & Brawer, 2003). Although research is being done to determine how to close the gap between under-prepared students and those who are academically equipped to begin their post-secondary education, colleges still need to meet the needs of the current under-prepared students. In order to achieve the goal of helping under-prepared students, colleges began implementing and experimenting with developmental education programs during the 1960's, which continues to this day. (Dotzler, 2003). Bailey, Jeong, and Cho (2010) state the purpose of developmental education is to strengthen the skills of under-prepared students who have entered college, allowing them the eventual opportunity to take college-level coursework.

As shown in Table 2.1, statistics from the National Center for Education Statistics in the Profile of Undergraduate Students (2010) demonstrate the number of students requiring at least one developmental education course has increased over the last ten years in almost all post-secondary institutions.

TABLE 2.1

PERCENTAGE OF STUDENTS TAKING AT LEAST ONE DEVELOPMENTAL CLASS

Type of Institution	1999-2000	2003-2004	2007-2008
All institutions	31.6%	34.3%	35.8%
Two-year public institutions	39%	42.4%	44%
Four-year public institutions	27.1%	29.0%	30.4%
Four-year Private, non-profit	20.7%	26.1%	26.1%
For-profit institutions	24.6%	26.5%	30.7%

Currently, when students arrive on college campuses to enroll in courses, they often have to take placement tests (Oudenhoven, 2002). These tests indicate the students' college readiness for specific courses and are given in order to place students in courses in which they have the best chance to achieve success. Placement in developmental education courses is not based on a set of universal standards; rather it is determined by each individual institution's admissions requirements and placement test scores (Bailey, Jeong, & Cho, 2010; Kozeracki, 2002; Merisotis & Phipps, 2000). Some of the courses covered in developmental education include but are not limited to mathematics, science, reading, writing, and English. The main purpose of any of these developmental courses and any developmental education program is to allow more under-prepared students the opportunity to achieve a higher education (Dotzler, 2003).

Hutchinson Community College and Area Vocational School (HCC-AVS) offers developmental courses in English, mathematics, and reading. During the fall 2009 semester, 18.9% of all the new, full-time students were required to enroll in at least one developmental education course (R. Jenson, Information Technology Services, personal communication,

February 3, 2011). Additionally, during the 2009-10 school year, 12.15% of all first-time students scored in the developmental range on the pre-enrollment reading assessments. This increased to 13.29% during the 2010-11 school year (R. Jenson, Information Technology Services, personal communication, February 21, 2011). Any of these students that were taking six or more hours were required to enroll in the Reading Comprehension I course.

2.2 Adult Learning

As students enter post-secondary education, they are 18 years of age and are considered adults. Houle (as cited in Merriam & Brockett, 2007) states adult learners have a different set of motives for learning than those of child learner. Motives of adult learners vary from goal-oriented to activity-oriented to learning-oriented. Goal-oriented adults are those who participate to meet specific objectives, activity-oriented adults are those whose participation has little or no bearing on the content being learned/taught, and the learning-oriented adults are those who seek knowledge for the sake of having knowledge.

An educational term that has been used when dealing with adults is andragogy. Knowles (1980) defines andragogy “as the art and science of helping adults learn, in contrast to pedagogy as the art and science of teaching children” (p. 43). According to Knowles, Holton, and Swanson (2005), there are six principles of andragogy:

1. The learner’s need to know;
2. Self-concept of the learner;
3. Prior experience of the learner;
4. Readiness to learn;
5. Orientation to learning; and
6. Motivation to learn. (p. 3)

Purcell-Gates, Degener, Jacobson, and Soler (2002) examined approximately 150 adult learners ranging in age from 18-68 to determine if using authentic or real-life literacy activities make a difference in their literacy practices. These students were enrolled in either Adult Basic

Education programs or English for Speakers of Other Languages programs or they were working through a Graduate Equivalency Degree or were enrolled in family literacy classes. The study found that the higher degree of authenticity or real life application of the literacy activity and material used in the classes showed a statistically significant increase in the varied and more frequent literacy practices outside of school. As indicated by Knowles, Holton, and Swanson's (2005) first principle of andragogy, adults who were learning something that was practical to their lives or were learning something they needed to know had a higher rate of literacy practices outside the classroom than those whose lessons were not practical to their everyday lives.

The principles of andragogy focus the teaching towards each learner's need, self-concept, prior experience, readiness, orientation, and motivation (Knowles, Holton, & Swanson, 2005); therefore, Houle (as cited in Merriam, 2001, p. 6) states using these principles, teachers are involving the "learners in as many aspects of their education as possible and in the creation of a climate in which they can most fruitfully learn."

2.3 Computer-Based Instruction

Research in cognitive development has shown the four fundamental characteristics of learning are active engagement, participation in group work, frequent interaction and feedback, and connections to real-world contexts. Active engagement can occur with the use of computers in many areas of the classroom (Roschelle, Pea, Hoadley, Gordin, & Means, 2000). In science classrooms during experiments, students can use a technology design called "Microcomputer-Based Laboratory" to input data in order to graph it so they can then analyze it. In almost any course of study, students can use desktop publishing programs and desktop video to design presentations that demonstrate their level of understanding of concepts learned. By creating the presentations, students have moved from being passive learners to actively working to

demonstrate what they have learned. Shared databases and discussion boards allow students to engage in group work using computers. Not only are students in the same classrooms able to work collaboratively but also students in online classes and students in face-to-face classrooms around the globe can collaborate. Computerized instruction often allows students to receive more immediate feedback. Often-times the students are engaged for extended periods of time allowing the teacher to use that time to give individual feedback. The design of many of the computer programs is such that the program itself gives initial feedback to the students, and in some instances the teacher is often given feedback on areas in which the students need additional help. Students also have the ability to make connections to the real world via computer technology because computers allow them to find the latest research in the areas they are studying. Students can also link up with professionals in different areas and quite possibly have access to some of the same tools those professionals use. This allows some students to work with professionals who are making valuable contributions to our society.

There are many challenges to using computer-based instruction (CBI) in the classroom. Roschelle et al. (2000) report some challenges: the teacher has to be knowledgeable about the computer programs, and since many teachers feel the pressure to meet state standards and goals they stick to the textbook curriculum instead of pursuing the use of computer-based instruction. Regardless of the challenges, the effective use of computer technology in the classroom can lead to increased performance (Gonzalez, Jover, Cibo, & Munoz, 2010; Powell, Aeby, & Carpenter-Aeby, 2003; Mioduser, Tur-Kaspa, & Leitner, 2000).

Gonzalez et al. (2010) completed a study with 121 students in dental school. The students in an introductory statistics course used a program called e-status, which is a web-based tool that generates different statistical exercises and provides the learners with immediate

feedback. The participants were randomly assigned to groups A or B with each group having access to complete specific yet different types of problems using e-status before they took an exam. Taking advantage of using the e-status program was optional for all the students.

Gonzalez et al. (2010) reported the students who used the e-status intervention on their practice problems demonstrated an overall 5% increase on their exam scores.

In another study done with college students, a total of 214 third-year medical students participated in a randomized study involving information about arterial blood gasses (Vichitvejpaisal et al., 2001). Two methods of learning occurred. First, a group of students studied a 275-page textbook which included photos, charts, and diagrams. The second group of students studied a 455-page computerized program which included demonstration videos, color graphics, and animated illustrations with sound effects. Students were allowed to hear the animations and other audio parts of the program with the touch of a repeat button. These students also had access to an onscreen calculator and a recordable text field for their use while they were solving problems, and they could search for specific information with the computer redirecting them to the appropriate place within the computerized textbook.

Prior to beginning their study, the students took a pre-test. Then both groups of students studied their material for one day and took the post-test (Vichitvejpaisal et al., 2001). The students who studied from the regular textbook scored significantly better on the post-test. Possible explanations for this are because the CBI students spent more time watching interactive lessons and were not able to complete all of the lessons, or the students were used to studying with a regular textbook versus a computerized-formatted textbook. Interestingly, a final test was given on the material three weeks after the post-test, and at this point the scores between the two groups of students showed no statistical difference. In fact, the textbook group forgot a great deal

of the information they learned while the CBI group maintained most of what they learned. While the initial amount of information learned was less, the amount of retained information was greater for the CBI students.

Computer-based instruction can occur either with or without teacher facilitation. Powell, Aeby, and Carpenter-Aeby (2003) wanted to determine if computer-based instruction with teacher facilitation made a difference in student outcomes. Disruptive students enrolled in an alternative education program used the computerized curriculum called SuccessMaker Secondary Adult Package. Most of the students were at least 15 years old and classified as either eighth, ninth, or tenth graders and were working on earning their GED. Each group of students used the program to help them achieve a passing score of 70 on their GED exam. Group I students paced themselves and had teacher facilitation; however, Group II students had a teacher facilitator guiding them through the curriculum and helping them make choices about what assignments to complete. With teacher facilitation, Group II had an increase in their grade of 6.23 points whereas the Group I students demonstrated a decrease of 2.60 points. However, none of the students had enough of an increase in their grade that would allow them to receive a passing score of 70 in order to earn their GED. Initially, between the two groups, there was a 1.47 point difference in their grade averages, but at the end of the study plus 180 days, there was a 10.30 difference. Although neither group in the alternative education plan had a high enough grade of 70 to pass, the results of this study appear to show teacher facilitation of computerized instruction leads to increased learning above non-teacher facilitation which leaves the students making all of the choices.

Rouse and Krueger (2004) conducted a study to determine whether Fast For Word (FFW) would bring about improvements in students' reading abilities in a school district located in the

northern part of the United States. FFW is a program designed to improve language and reading skills in students of all ages. The study was conducted in four schools in an urban school district with over 20,000 students. The schools chosen had a high percentage of minority, low income, and English language learner (ELL) students. All the students chosen to participate in the study were significantly below grade level in reading. Students in the experimental group completed FFW language, FFW language-to-reading, and FFW reading, in addition to their regular reading program Success for All (SFA). The control group participated in only the SFA reading program with no other intervention. The experimental group showed some gains in language skills over the control group, but there did not appear to be any gains in language acquisition or actual reading skills.

However, some areas of improvement in reading were seen with an intervention of computer-based instruction with young children in a study conducted in Israel by Mioduser, Turkaspa, and Leitner (2000). The computer program I Have a Secret – I Can Read was used with pre-school children demonstrating a high risk for learning disabilities. The purpose of the study was to determine if an intervention using computer material would improve the students' phonological awareness, word recognition, and letter recognition. The three groups in the study were group A who received no intervention, group B who received an intervention with printed materials, and group C who received an intervention with both printed and computer-based materials. The students were tested in eleven different reading related areas, and group C outscored both groups A and B in six of the eleven areas. In two areas, both groups B and C outperformed group A, and in two areas there was no difference among any of the groups. No results were given for the 11th area.

Results from various research studies are mixed concerning computer-based instruction. In some cases, CBI seems to be beneficial for the students (Gonzalez et al., 2010; Powell, Aeby, & Carpenter-Aeby, 2003; Mioduser, Tur-Kaspa & Leitner, 2000), and in some cases, there doesn't seem to be a positive effect on learning (Rouse and Krueger, 2004; Vichitvejpaisal et al., 2001).

Lowe and Holton (2005) felt that developing a theory concerning the factors that might lead to effective computer-based instruction was important. They state:

CBI is touted as providing numerous benefits in practice. It is generally believed that CBI provides consistency of content delivery, more readily provides training to remote locations, eliminates costs associated with employees' travel, provides means of tracking learners' progress, provides standardized testing, offers learner flexibility in controlling and pacing learning, provides for diverse learning needs, provides opportunities for practice through simulation, provides greater retention, and reduces the instructional time. One must wonder then why more organizations are not using CBI as their major delivery method. (pp. 159-160)

They came to several conclusions concerning computer-based instruction and adult learners. First, Lowe and Holton (2005) concluded that as CBI for adults is being designed, the characteristics of adult learners need to be taken into account. Many adults are self-directed and have computer self-efficacy; therefore, the programs should take this into account. However, adults with limited self-directedness and computer self-efficacy would require a greater amount of "teaching support" and control from the program itself. Both of these components need to be aligned with the ability of the adult learners in order for the learners to stay motivated and not get bored or frustrated based on their level. Additionally, as these programs are being designed, these considerations need to be implemented.

Lowe and Holton's (2005) second conclusion is that CBI design should be linked with the adult learners' self-directedness, computer self-efficacy, learning goal level, instructional design strategy, and external support. Effective CBI is more than just converting face-to-face

instruction to CBI. Support during instruction is every bit as important as the design of the instruction. Powell, Abey, and Carpenter-Abey's (2003) study revealed this when the students with teacher facilitation demonstrated higher increases in their grades than those without. Both the personal support and the program support must be aligned with the adult learners' status (Lowe & Holton, 2005). In addition, if the learning goal level is low with an appropriate instructional design, there must also be an appropriate level of support in order for the program to be effective. There are many combinations that must match, and this alignment must occur within these programs for them to be effective for adult learners.

The third conclusion revealed by Lowe and Holton (2005) states that the learning goal level will affect the instructional design strategy. All parties involved in the creation and production of the CBI must work together to create an effective product that will lead to the desired learning goal. Lower-level learning goals will require more program control whereas higher learning goals should allow the adult learners some control of the CBI.

Lowe and Holton's (2005) fourth conclusion is that external and instructional supports are important. Both of these help the adult learners develop self-directedness and computer self-efficacy. Without the external support which comes in the form of encouragement and positive experiences for the learners, the adult learners may become frustrated and fail to engage in the CBI which would lead to less than ideal learning situations.

Although this study only provides theories on adult learners and CBI, Lowe and Holton (2005) conclude these are areas that should be considered during the design and production of computer-based instructional programs.

2.4 Reading Plus

Reading Plus is a computer-based instructional reading program focusing on developing a student's independent silent reading. The first version of Reading Plus was introduced in 1995 by Taylor/Associates/Communications, Inc., and the development of their web-based version began in 2002 (Reading Plus, 2011, Our History). The program is based on research in silent reading technology and can help elementary through college age students (Reading Plus, 2011, About Us).

Reading Plus picks up where phonics and oral reading instruction leave off, providing rapid and sustainable comprehension and silent reading fluency gains. The system's assessments, individualized dynamic intervention, and progress monitoring provide the solutions needed to effectively identify and remediate struggling students, as well as others who could benefit from silent reading fluency development. (Reading Plus, 2011, Our System, para. 1)

The Reading Plus system is comprised of several components including the Reading Placement Appraisal (RPA), PAVE (Perceptual Accuracy/Visual Efficiency), Guided Reading, Cloze Plus, Reading Around Words, Word Memory and D-Code (Reading Plus Reference, 2009). For the purposes of this study, the students complete the RPA, PAVE Guided Reading, Cloze Plus, and Reading Around Words lessons.

The RPA is the assessment portion of Reading Plus (Reading Plus Reference, 2009, Reading Placement Appraisal). First, the student completes part one of the RPA, Literal Understanding, which determines the student's independent reading level. This is a level where he is familiar with the majority of the vocabulary and can easily read and comprehend the selection. During the Literal Understanding portion of the appraisal, both reading rate and comprehension are measured, and a tentative independent reading level is determined. Next, the student completes part two of the RPA. This part presents longer reading selections at a level just below the student's independent reading level, as determined by the Literal Comprehension

portion of the appraisal. The student's depth of comprehension is revealed by the Comprehension portion of the appraisal by testing comprehension skills in the areas of main idea, predicting outcomes, drawing conclusions, making inferences, relating information, finding significant details, comparing/contrasting, cause/effect, classifying, and analogies. Based on the results of the Comprehension part of the appraisal, the program determines the student's Assigned Reading Level (ARL). Part three of the RPA, Vocabulary, tests the student's vocabulary knowledge by presenting 20 multiple choice questions. When the student experiences four errors, a final Assigned Vocabulary Level (AVL) is established, which then determines the level of placement within Reading Plus's vocabulary programs including Cloze Plus, Reading Around Words or a combination of the two. The Guided Reading level at which the student is assigned in the reading portion of the program is determined by his ARL in relation to his AVL. Although there is a fourth part to the RPA, Perceptual Memory Appraisal, it was not used during this study.

After completing the RPA, the program assigns various lessons that will be beneficial for the individual student as he completes the assigned lessons each time he logs onto the Reading Plus program. The first lesson a student completes is PAVE, which stands for Perceptual Accuracy/Visual Efficiency (Reading Plus Reference, 2009, PAVE). PAVE is used primarily as a warm-up activity in which the student completes scan and flash segments which "develop visual/functional proficiency, visual identification and recognition skills, a strong visual memory, and visual/spatial awareness" (Reading Plus Reference, 2009, PAVE Overview, para. 1). During the scan segment, the student is shown a target number or letter. He counts the number of times he sees the number or letter, as random numbers or letters are shown, three per line, in a left-to-right fashion at predetermined and progressively increasing rates. Scan training ...develops ocular motility (rotating the eyes with ease and comfort), improves binocular coordination (moving both eyes in a coordinated manner with binocular fusion, or single

vision, improves accuracy of fixation (tracking visually with competence [and] develops effective left-to-right directional attack. (Reading Plus Reference, 2009, PAVE Pedagogy, para. 3)

After completing three scan segments, the student moves on to flash segments. During the flash segment, the program flashes a set of one to nine numbers or letters for 1/10 of a second. The student then types in the sequence of the set of numbers or letters he saw and is given immediate feedback for correct or incorrect answers.

Flash training “focuses attention and develops sustained attention, builds rapid, accurate, and orderly seeing, and develops strong retentive memory” (Reading Plus Reference, 2009, PAVE Pedagogy, para. 2). Upon completing 10 flash problems, the student is finished with the PAVE lesson and moves on to Guided Reading.

When the student starts a Guided Reading lesson, he is allowed to choose from a range of 20 to 25 stories that are within his ARL. The student chooses between fiction, informational, biographical, or historical stories after previewing the title, a picture and a short two sentence synopsis of the available stories (Reading Plus Reference, 2009, Guided Reading). As he begins the lesson, he is presented with keyword practice in which he is shown key vocabulary words in order to build familiarity with words he will encounter in the story. Next, the student reads a short preview of the story and then moves on to read the entire story in an independent reading, guided reading, or independent/guided reading format. The student’s comprehension is checked with 10-20 multiple choice comprehension questions either at the conclusion of the story or at spaced intervals during the story. If the student misses a comprehension question, he is redirected to the portion of the story that answers the question in order to help him choose the correct answer. The student also has a predetermined number of rereads that allows him to reread the appropriate portion of the story if he is unsure of an answer to a question. At the conclusion

of each story, the student gets a report page that shows his independent reading rate (I-Rate), guided reading rate (G-rate), and comprehension score.

At any time when a student starts in a new level in Guided Reading, he begins reading text in a multi-segment, independent format to determine his I-Rate (Reading Plus Reference, 2009, Guided Reading). Independent reading segments show the text on the screen one line at a time with the text eventually being removed one line at a time. As the student gets to the end of the text, he clicks a Go On button that allows the program to measure and record his I-Rate. The multi-segment (MS) format allows the student to read a small portion of text, answering two to four questions and repeating this cycle until he is done reading the entire story. Once the student completes a pre-determined number of independent reading segments with 70% or better comprehension, he will begin reading lessons in a guided reading format. His beginning G-Rate is initially the same as his I-rate. During a guided reading segment, the text is presented in a timed format, with the words moving through a *guided* slot. As long as the student is maintaining 70% comprehension, the program will incrementally increase his G-Rate. Once I-Rate, G-Rate, and comprehension goals are met, the student advances to the next level. If a student is not meeting the goals within the program, adjustments are made automatically or the program offers suggestions to the teacher in order to help the student continue increasing his reading rate while maintaining adequate comprehension within the program.

Reading Plus Reference (2009) states

The primary goal of Guided Reading is to develop or improve an individual's Fundamental Reading Process which is comprised of his/her visual/functional proficiency (visual coordination, ocular motility and precision in tracking), perceptual development (accuracy in visual discrimination and word recognition automaticity) [and] information processing competence (efficiency in the use of short-term memory, realization of syntax, and language experience). (Guided Reading Pedagogy section, para. 1)

By modeling, adapting, and internalizing the reading skills presented in the Guided Reading lessons, students have the opportunity to attain adequate reading rates for their expected level of education, to increase their comprehension, and to increase their enjoyment of reading.

After completing Guided Reading lessons, the student works on the vocabulary portion of the program including Cloze Plus lessons, Reading Around Words lessons or a combination of the two. Students with an Assigned Vocabulary Level of fifth grade or lower complete Cloze Plus lessons, students with an AVL anywhere between sixth and eighth grade complete both Cloze Plus and Reading Around Words, and students with an AVL of ninth grade or higher complete the Reading Around Words lessons (Reading Plus Reference, 2009, Reading Placement Appraisal Interpreting Records).

The Cloze Plus lessons use structured cloze instruction and vocabulary-in-context activities to help develop a student's vocabulary skills as well as his comprehension proficiency (Reading Plus Reference, 2009, Cloze Plus). In the Cloze Plus lessons, the student is allowed to choose the lesson from a list within his AVL. First, the student works through a Keyword activity which presents words that are important to the lesson. Then the student does a Meaning Completion segment which presents short paragraphs in which one of the sentences is presented with a missing word. The student has two chances to select the correct answer from four provided choices. If he needs help he can select the Clues button and key contextual text will be highlighted. Another type of meaning completion exercise presents short paragraphs with a highlighted target word. From four provided choices, the student selects the word that means the same thing as the highlighted word. After Meaning Completion, the student moves on to Syntax Completion where a short paragraph is displayed in which one of the sentences has a blank. The student types in a word that fits in the blank. Several different yet similar word choices are

allowed as correct answers. Once a correct word is typed, the other word choices are displayed for the student to see. If his first answer is not correct, the computer flashes one of the correct choices three times and allows the student to type in that answer. Once again, when the correct answer is typed, the other answer choices are shown to the student. If the student is not able to type the word in correctly, the program then displays all the answer choices. Vocabulary Awareness is the next activity the student completes by reading a paragraph in which a word has been highlighted. The student needs to locate and type in the word in the paragraph that refers to the highlighted word. If his first answer is incorrect he is allowed to try again, but after a second error, the correct answer is shown to the student. The last activity is called Type the Word. The student reads a short paragraph which has one missing word, and he types in the correct word. There is only one correct answer, and if he misses it the first time, the correct word will flash three times. The student then has a second chance to type in the correct word. Regardless of whether his second attempt is correct or not, the correct word appears in the blank for the student to see. As with the Guided Reading lessons, when the student has completed the Cloze Plus lesson, a summary of his performance is shown for that lesson as well as the previous nine lessons.

Reading Around Words lessons provides each student with practice using contextual analysis by exposing him to “specially prepared context in conjunction with selected target words” (Reading Plus Reference, 2009, Reading Around Words Pedagogy, para. 13). Reading Around Words activities use synonyms, definitions, comparison/contrast, and interpretation/application contextual clues to help the student find word meanings (Reading Plus Reference, 2009, Reading Around Words). When a student starts a Reading Around Words lesson, he takes a pre-test over 15 words, which is then followed by a practice lesson of the

words he missed. Once the student completes all the lessons on one level, he takes a post-test that assesses his retention of the practiced words. Several practice activities are provided allowing the student the opportunity to learn the words he missed on the pre-test. First, the New Word activity flashes the target word in a blank line within a sentence. The student has to type the word in correctly. If he types it incorrectly two times, the letter is provided, and he continues on until the word is typed correctly. Once the word is in place, it is pronounced for the student. Word in Use is the second activity the student completes. A short paragraph which helps the student understand the meaning and use of the targeted words is provided. Following Word in Use, the student completes Word Meaning in which he is provided with a question about the correct meaning or usage of the word and answer choices such as “Which of these would probably take some effort for most people? [answer choices] going to the movies, always being right on time, eating fried worms, talking about bananas [or] learning to play the harmogrphone [sic]” (Reading Plus Reference, 2009, Reading Around Words Lesson Format, para. 10). In this activity there may be more than one correct answer. The student has a Clues button which, when selected, will highlight significant words in the paragraph which he is allowed to reread. After two incorrect choices, the student is shown the correct answer along with an explanation. The last activity is Memory Word in which the target word is flashed on the screen, and the student types the word from memory. After completing the Reading Around Words lessons, the student is shown a progress report on his pre-test, practice and post-test results.

The Reading Plus program meets many of Lowe and Holton’s (2005) theories on the use of computer-based instruction with adults. Lowe and Holton state the program needs to be workable for both adult learners who are familiar with a computer and those who are not. Further, the program should have controls that move students along as they are learning and

provide extra support that will keep the students from experiencing frustration. Learning goals should be well established, and the program should have instructional as well as external support for the students. Reading Plus is workable for adult students with various levels of computer knowledge because the program can either be automated or manual. The automated program would be highly beneficial for students with little computer self-efficacy, and as the students become comfortable with the program, they could move to manual programming, which allows the teacher more control over the types of lessons the students complete. Students begin working in the program at a level that is an independent reading level allowing them the highest opportunity for success. As they advance and possibly begin experiencing less-than-positive results, the program sends warnings to the instructor and adjustments are made within the students' programming (Reading Plus Reference, 2009).

There have been several research studies conducted to determine if the Reading Plus (RP) program is beneficial to students of varying ages. A retrospective study was conducted in Miami-Dade County Florida Public Schools during the 2006-07 school year to examine the fourth through tenth grade students' achievement levels after participating in the silent reading instructional program (Rasinski, Samuels, Hiebert, & Petscher, 2011). The study examined results of sixth months of data in which the students spent approximately 90 minutes per week on the program. Achievement levels were determined based on both criterion-referenced test (CRT) and norm-referenced test (NRT) scores from the Florida Comprehensive Assessment Test (FCAT). Over 16,000 students were part of the study with the control group consisting of 2/3 of the students and the experimental group consisting of 1/3 of the students. A large percentage of the participants were minority students, and some of them were identified as learning disabled and ELL students. The RP students completed the Reading Placement Appraisal to determine

their placement level in the Reading Plus program. As they completed their subsequent 30-minute sessions, they proceeded through the program in a specific sequence with the program automatically adjusting the difficulty level of the lessons based on each student's progress. The RP intervention students demonstrated significantly higher gains than the control group on at least one of the two FCAT tests. On the CRT, the RP students in grades 5-9 demonstrated significantly greater gains, and on the NRT, students in grades 4-8 and 10 demonstrated significantly greater gains than the non-RP students. The RP students were broken down into students completing 1-39 sessions and 40 or more sessions. Rasinski et al. (2011) found

...students receiving the intermediate number of RP lessons (1-39) tended to have gains that were greater than students receiving no lessons, but had gains that were less than students receiving 40 or more lessons. This suggests that the effects of the RP lessons are cumulative – more instruction using RP led to greater gains in reading achievement. (p. 12)

Student engagement and time on task are often thought to be determining factors in the amount of learning that occurs. Student engagement in academic work is defined by Newmann, Wehlage, and Lamborn (1992) as “the student's psychological investment in an effort directed toward learning, understanding or mastering the knowledge, skills, or crafts that academic work is intended to promote” (p. 12). Carini, Kuh, and Klein (2006) found that college students' grade point averages were positively related to their level of engagement, and first-year college students had higher academic performance when they completed readings and assignments before going to class and when they met their instructors' expectations by working harder than they thought possible. The nature of the Reading Plus program puts the student in a situation whereby they are actively involved in completing reading activities and receiving individualized instruction as opposed to receiving whole or small group instruction with limited time spent

reading. This more individualized approach allowing more time on task may lead to higher achievement levels for the students (Marrs & Patrick, 2002).

Positive results were found when Tran, Yu, Okumura, and Laukkanen (2004) completed a study with third-year optometry students to determine if using the Reading Plus program had any effect on fixations, regressions, span of recognition, duration of fixation, reading rate, and reading grade level. The students in the experimental group completed 40 Reading Plus sessions over the 10-week study and the control group students did nothing out of the ordinary of their usual schedules. Although the sample size of three control subjects and five experimental subjects of this study was very small, all of the experimental students demonstrated significant improvement in their fixations, regressions, reading rates and reading grade levels. The students in the control group didn't show any significant improvement in any of the six areas that were the basis of this study.

During the 2000-2001 school year, twenty-five seventh graders in Washington participated in a study conducted by Shelton (2007) to determine if the Reading Plus program produced improvements in the students' reading as determined by the STARS reading assessment. Shelton reported that 22 of the 25 students demonstrated a positive, significant difference between their pre-test and post-test mean reading levels. Although Shelton reported these students demonstrated improvement in their reading, there was no control group with whom to compare their improvement, nor was there any mention as to whether the gains these students made would have been gains that could have been produced with other types of reading instruction.

In a study conducted with sixth, seventh, and eighth grade students in a Midwestern school, Marrs and Patrick (2002) found mixed results concerning the Reading Plus program

when they compared two groups of students. A group of 87 students spent two to three hours weekly completing RP sessions and the results of these students' gains were compared to winter and spring norms for sixth, seventh and eighth grade students who completed a regular reading curriculum. Marrs and Patrick examined the improvements of the 87 students based on Curriculum Based Measure (CBM) Oral Reading and Reading Comprehension probes. An improvement less than what would be expected with the regular curriculum was seen by the sixth and eighth grade Reading Plus students; however, the seventh grade Reading Plus students demonstrated a greater than expected rate on both the CBM Oral Reading and Reading Comprehension. Upon viewing standardized test scores for all the students the researchers noted that the seventh grade students were a higher performing group of students, which may have influenced the results due to the fact these students may have benefited more from the Reading Plus program. Although the results were not consistent for all grade levels, the study revealed that at least for some students the Reading Plus program was beneficial.

In the Reading Plus What Works Clearinghouse (WWC) Intervention Report (2010) sponsored by the US Department of Education Institute of Education Sciences, "Reading Plus was found to have potentially positive effects on comprehension for adolescent learners" (p. 1). One of the purposes of WWC is to provide reliable information about effective educational strategies and programs based on scientific evidence which will enable educators to identify and utilize successful teaching practices which may lead to desired improvement in the classroom (About Us, n. d.).

Several Reading Plus studies reported positive results concerning improvement in students' reading abilities (Rasinski et al., in press; Shelton, 2007; Tran et al., 2004); however, the results of the Marrs and Patrick (2002) study were not consistent across all grade levels

because only two of the three grade levels demonstrated gains after using the Reading Plus program. Although there is positive research concerning the Reading Plus program, more research should be done to substantiate the effectiveness of the program on students' various reading skills.

Computer-based instruction does have its place in education as evidenced by the research demonstrating positive student outcomes and positive gains have been shown using different computerized reading programs as well. Reading rate and fluency are an important part of a student's reading skills as indicated by the research. The Reading Plus program uses computer-based instruction with teacher support to help students increase their vocabulary skills, reading rates, and comprehension abilities. This researcher wanted to examine a different approach to using the Reading Plus program to determine if it would produce an increase in the student's ability to transfer his guided reading rate set by the program to an independent reading rate he can use when reading printed materials.

2.5 Instructional Planning

In today's educational world, teachers must follow an instructional plan for their students based on standards set forth by the state level. These standards indicate what students must learn and at what ages they should be learning them. When students enter a teacher's classroom, many of them are at different levels. First, the teacher must determine each student's current achievement level and then ascertain an instructional plan that will enable him to attain the appropriate learning goals (Voltz, Sims, & Nelson, 2010). Some standards cover single objectives and some of them allow the students to learn beyond just a single objective. The standards that allow students to learn beyond a single objective are called power standards, and they have one of three characteristics: first, learning this standard will allow the students to have

important information that will benefit them for the rest of their lives; second, learning this standard does not just meet the goal of one subject area but works across many content areas; and third, this standard will help the students form a foundational understanding of content that will be used in future learning. If teachers focus on teaching these power standards, the instruction will have a greater effect on the students' learning than if they prioritize standards that address a single objective (Reeves, 2000). Using learning strategy instruction is one way that teachers can help students learn across various curriculum areas. In this way students learn a strategy that not only helps them in reading, but also helps them in science and social studies too (Voltz, Sims, & Nelson, 2010). In Schumaker, Denton, and Deshler's *Learning Strategies Curriculum: The Paraphrasing Strategy* (as cited in Voltz, Simms, & Nelson, 2010), a learning strategy is introduced for improving reading comprehension. This particular strategy will improve students' comprehension in any subject matter in which they apply it. For example, students learn and apply the acronym "RAP." The components of RAP are as follows:

R=Read a paragraph;
A=Ask yourself about the main idea and details; and
P= Put it in your own words. (p. 79)

Although students will most likely be taught this strategy in reading classes, it will become powerful in that it will enable them to know how to approach any textbook reading and will therefore lead to improvement of their comprehension in all subject areas.

Reading Plus is a computer-based instructional program that first determines the students' current reading level and places them within the program accordingly. Then the program assigns appropriate lessons allowing students to not only meet specific reading and comprehension standards, but uses a learning strategy instructional approach by presenting students with multiple forms of text. By improving their reading skills while reading

informational, biographical, historical and fiction pieces of text the students have a greater chance of comprehending these same types of text as they begin reading text from their educational textbooks.

2.6 Research Question

A random sampling of professionals on the campus of Hutchinson Community College and Area Vocational School (HCC-AVS) were selected to read for three-minutes from the book *The History of Nearly Everything* to determine an average silent reading rate. Of those who voluntarily participated in this “reading test,” five had a PhD, 14 had a Master’s degree and three had a Bachelor’s degree. The 22 professionals demonstrated an average silent reading rate of 245 words per minute (wpm). In a study of 90 typical college students, Lewandowski, Coddling, Kleinmann, and Tucker (2003) used the Nelson Denny Reading Rate (NDRR) test and the Woodcock Johnson-III Reading Fluency (RF) and Word Attack (WA) tests to determine an average reading rate. These students read correctly an average of 189 wpm on the Woodcock Johnson-III tests and 231 wpm on the Nelson Denny test.

Although an adequate silent reading rate for college students is not precisely known, there is a system available to help students increase how fast they can read.

The Reading Plus system quickly builds reading rate and independence, helping college students eliminate the poor habits that cause slow and inefficient silent reading. Rate gains are rapid and sustainable, so students reach a reading level where they can keep up with their college assignments. (Reading Plus, 2011, Post-Secondary Intensive Reading Solution, para. 2)

What is the best format (guided readings or independent and guided readings combined) within the Reading Plus program that will allow a student to increase his independent reading rate, while also increasing his reading level? What effect does the Reading Plus program have on a student’s oral and silent reading rates and reading level gains when the student receives the

majority of the lessons in the guided format versus receiving both guided and independent formatted readings? It is believed a student who receives a majority of instruction in the guided format will demonstrate more of an increase in his oral and silent reading rates as well as demonstrate an increase in his reading levels as measured by oral reading Curriculum Based Measurements, silent reading rate measurements, and the Nelson Denny Reading Test.

CHAPTER 3

METHODOLOGY

Current statistics reveal that the number of students required to take developmental courses in college is on the rise. As evidenced by the research in the literature review, Reading Plus has a positive impact on increasing students' reading levels. Seeking to determine a better method of increasing reading rates and reading levels, this study examined the use of the computer-based Reading Plus program with developmental students in a community college located in the Midwest.

3.1 Participants

Hutchinson Community College and Area Vocational School (Hutchinson Community College and Area Vocational School, n. d.) is a two-year community college and vocational school. It is located in Hutchinson, Kansas, and has an annual enrollment of approximately 9,500 students. HCC-AVS offers 64 areas of study allowing students to earn an Associate of Arts, Associate of Science, or Associate of Applied Science Degree.

Trying to address the needs of the under-prepared students, at the beginning of the spring 2009 semester, HCC-AVS implemented a mandatory reading policy in addition to its mandatory placement of students in specific math and English composition courses based on either ACT, Compass, Asset, or Accuplacer scores. First-time students without ACT scores are required to take these English, math, and reading assessments. Students are placed in the mandatory Reading Comprehension I course if their assessment scores are under the following benchmarks: 39 on ASSET Reading, 17 on ACT Reading or 75 on COMPASS Reading (Mandatory Reading Policy, 2005). The mandatory reading comprehension course had an enrollment of 14.04% of the incoming freshman during the fall 2009 semester and an enrollment of 14.89% during the fall

2010 semester (R. Jenson, Information Technology Services, personal communication, February 21, 2011). The intention of mandatory placement in Reading Comprehension I was to better prepare these students for college-level courses in which they will be expected to read and comprehend their textbooks independently.

This study was conducted in four of the Reading Comprehension I courses at HCC-AVS. There were 33 students enrolled; however, only 25 of the students completed the assessments and lessons required to be a participant in the study. Of the participants, 76% were male and 24% were female. Racially, there were 52% African-American students, 16% Hispanic, 24% Caucasian, and 8% were from other races. English language learners made up 16% of the students and the self-reported number of students with disabilities was 8%. The number of economically disadvantaged students was unknown, and the three credit hour reading comprehension course also consisted of 80% traditional age college freshman.

The community college students enrolled in these Reading Comprehension I sections were under-prepared students, all of whom tested below the tenth grade reading level the first day of class based on the Nelson Denny Reading Test (NDRT). The students' attitudes and habits concerning reading are indicated in Table 3.1.

TABLE 3.1

STUDENT ATTITUDES ABOUT READING

Questions	Responses				
How much do you like to read?	I hate reading and never read in my free time. 24%	I dislike reading, will not read in my free time but I will read if I have to 32%	I like to read and occasionally read in my free time 36%	I love to read and often read during my free time 8%	
In the last four years, on a weekly basis how much have you read for fun?	0 hours 16%	2 hours or less 32%	3 to 5 hours 36%	6 to 9 hours 8%	10 or more hours 8%
In the last four years, on a weekly basis, how many hours did you read for school?	0 hours 4%	2 hours or less 48%	3 to 5 hours 40%	10 or more hours 4%	I was not in school in the last four years 4%
I feel like my reading skills are below average, average or above average.	Above Average 0%	Average 72%	Below average 28%		
I feel like my reading rate (the speed that I read) is adequate/okay for a college student.	Adequate 60%	Inadequate 40%			
How many hours of Reading Plus homework will you complete (2 are required)?	2 hours RP homework 96%	1 hour RP homework 4%			

In order to get the students reading on a consistent basis throughout the semester, the instructor used the computerized reading program called Reading Plus. Weekly, the students

spent two of their three classroom hours on the RP program with another two hours of homework sessions being assigned to them.

3.2 Instructional Tool

Students engaging in the use of the Reading Plus program have been shown to increase both their reading levels and reading rates, including their independent and guided reading rates, as evidenced by the instructor in previous classes. As previously discussed in chapter 2, section 2.4, the Reading Plus (RP) program has three different lessons which when completed in a certain fashion constitute completing one RP session. For the purposes of this study, a RP session consisted of completing one PAVE lesson, two Guided Reading lessons and two vocabulary lessons.

The Reading Plus program is 100% computerized. The first time the students are on the program, they complete the Reading Placement Appraisal (RPA). During the RPA, the computer gauges the students' comprehension and vocabulary skills and places them at a level in the program that is an independent reading level for them. Students progress from level to level when they achieve the independent and guided reading rate level goals and complete five consecutive stories with an average of 70% comprehension or better (Reading Plus Reference, 2009). Since the program is computerized, the students can participate in the program with no intervention from the teacher. However, for best results, the teacher should monitor the students' progress and make adjustments to the program when needed. Two questions arise concerning the RP Program. First, how can a student's reading rate be effectively developed while still maintaining adequate comprehension? Second, when the student completes the Guided Reading lessons, using the guided reading format, what effect occurs to his independent reading rate?

3.3 Design

Part of the instructional process for the reading comprehension class at HCC-AVS consists of students completing both in class and homework RP sessions. Due to the fact that there is a learning curve involved in using the program efficiently, the students spend the first three to four class periods on the RP program with the instructor closely monitoring them. Upon the completion of the first few class periods, the students then spend four hours weekly on the program. Two hours of class time are spent on the program with the additional two hours being required as homework for the students. Typically, students will spend approximately 45 minutes to one hour completing one RP session.

The study was conducted in four Reading Comprehension courses taught by the same instructor. The experimental groups consisted of students in two of the four classes and are labeled A1 and A2. The control group consisted of students in the other two classes, labeled B1 and B2.

3.3.1 Experimental Group

After each student was placed at an independent reading level based on his Reading Placement Appraisal, he began completing sessions on the program. Every student in group A1 and A2 completed his first two levels of RP at an independent reading level. The first lesson each student completed was done in an independent reading format in order to determine his current independent reading rate. All subsequent lessons were completed using the guided reading format. The student's beginning guided reading rate started at the same rate as his first lesson. The student's guided reading rates increased incrementally with every one to two lessons he completed with a comprehension score of 70% or higher. If a student's comprehension score was below 70% he maintained the same guided rate until he completed two consecutive lessons

at 70% comprehension or higher; then the rate increased a small increment, just as before. Periodically, as each A1 and A2 student completed six to ten stories, his guided reading lesson was changed to the independent reading format. As this occurred, it was emphasized that the goal was to read independently at as fast a rate as possible while maintaining a comprehension score of at least 70%. The student's independent reading rate was then compared to his guided reading rate in order to determine if he was able to maintain his guided reading rate while in the independent format. At the conclusion of this RP session the student's guided reading lesson format was changed back to the guided reading format. This cycle was repeated until the end of the study. For the duration of the study, each student in groups A1 and A2 completed most of his guided reading lessons in the guided rate format, occasionally completing an independent rate format to demonstrate if he could transfer his guided reading rates to his independent reading rate.

3.3.2 Control Group

Upon completing the RPA, each student in groups B1 and B2 began progressing through the RP program. The first two levels completed were at each student's independent reading level. Once he began the third level, he was completing lessons at an instructional level. The teacher made no adjustments to the control group student's programming. As the student worked through the program, the computer simultaneously increased his reading rate and reading level. Once programming benchmark guided and independent reading rates were achieved and the student completed two guided reading lessons with 70% or higher comprehension, the student was advanced to the next reading level. As each student advanced to a new level, his reading rate was determined by the computer in this manner: an independent reading segment was administered, the student's independent rate was determined through those lessons; the next

session administered guided reading lessons using the guided reading format with a reading rate of approximately twenty words per minute higher than the student's independent reading rate. As the student worked through each level, he completed guided reading lessons in both the guided reading and independent reading formats. This cycle was repeated through the duration of the study with each student in group B1 and B2.

3.4 Instruments

Before the study began all of the students were given the standardized Nelson Denny Reading Test (NDRT), which reported grade level scores in vocabulary and reading and also reported one-minute silent reading rates. A second silent reading rate measurement was completed by the students when they read for three minutes from a book by Bill Bryson called *The History of Nearly Everything*. The students also completed two different, one-minute, Curriculum-Based Measurements (CBM) that measured their oral reading rates. A CBM consists of having students read aloud from their reading textbook for one-minute, and a score is determined by counting the number of words read correctly. Curriculum Based Measurements are useful in the classroom because they can be administered often, and the results can be graphed leading the teacher to gauge the students' improvement over time (Shinn & Bamanto, 1998). The first CBM was taken from Harcourt Brace's sixth grade Social Studies book *Ancient Civilization* and the second CBM was taken from McGraw Hill's college textbook *Sociology*. An average of these two CBM's was used for assessment purposes. Lewandowski et al. (2003) found an average oral reading rate of below 200 words per minute for college students using Curriculum Based Measurement (CBM).

Each of the texts that were used for the assessment measures were assigned a grade level based on the Flesch-Kincaid Readability Level. This readability level was accessed through

Microsoft Word 2007, and according to Kincaid, Fishburne, Rogers & Chissom (as cited by Paasche-Orlow, Taylor, & Brancati, 2003), “has been demonstrated to be reliable and valid” (p. 722). See Table 3.2 for the Flesch-Kincaid grade level readability scores for the four assessments.

TABLE 3.2
FLESCH-KINCAID GRADE LEVEL READABILITY SCORES

Type of Assessment	Flesch-Kincaid Grade Level Readability Score
Nelson Denny Reading Test, one-minute silent reading	5.9
<i>The History of Nearly Everything</i> , three-minute silent reading	11.5
<i>Ancient Civilizations</i> (6 th grade Social Studies book), one-minute oral reading	10.5
<i>Sociology</i> (college textbook), one-minute oral reading	13.4

These same assessment measures were given at the conclusion of the study to determine the effects of the experimental design on the students’ reading rates and the comprehension portion of the Nelson Denny Reading Test was used to determine if there was an increase in their reading levels.

CHAPTER 4

RESULTS

The purpose of this study was to determine if using only the guided reading format during Guided Reading lessons would lead to a greater increase in students' reading levels and higher increases in their rates than when they completed both the guided reading and independent reading formats during their Guided Reading lessons. The measures administered during this study were a CBM one-minute average oral reading rate, a three-minute silent reading rate, a Nelson Denny one-minute silent reading rate and the Nelson Denny Reading Test. Tables 4.1, 4.2, 4.3 and 4.4 show the means, standard deviations, and sample sizes (N) of these four different pre- and post-test measures.

TABLE 4.1

CBM ONE-MINUTE AVERAGE ORAL READING RATE

	Control vs. Exp.	Mean	Std. Deviation	N
CBM one-minute oral reading rate - pre	Control	119.7500	31.24885	14
	Experimental	110.0455	19.26844	11
	Total	115.4800	26.60454	25
CBM one-minute oral reading rate - post	Control	130.8929	28.08653	14
	Experimental	119.0455	18.77958	11
	Total	125.6800	24.70361	25

TABLE 4.2

THREE-MINUTE SILENT READING RATE

	Control vs. Exp.	Mean	Std. Deviation	N
Silent three-minute reading rate - pre	Control	114.2857	43.65147	14
	Experimental	106.5455	21.91969	11
	Total	110.8800	35.32270	25
Silent three-minute reading rate - post	Control	133.6429	28.18512	14
	Experimental	125.4545	48.08402	11
	Total	130.0400	37.56159	25

TABLE 4.3

NELSON DENNY ONE-MINUTE SILENT READING RATE

	Control vs. Exp.	Mean	Std. Deviation	N
Nelson Denny one-minute silent reading rate - pre	Control	150.7857	46.34350	14
	Experimental	180.1818	29.47140	11
	Total	163.7200	41.79765	25
Nelson Denny one-minute silent reading rate - post	Control	188.2857	65.47040	14
	Experimental	236.1818	87.06873	11
	Total	209.3600	77.90586	25

TABLE 4.4

NELSON DENNY READING LEVEL

	Control vs. Exp.	Mean	Std. Deviation	N
Nelson Denny Reading Score - pre	Control	6.8357	2.13095	14
	Experimental	6.9545	2.23936	11
	Total	6.8880	2.13372	25
Nelson Denny Reading Score - post	Control	7.6143	2.45854	14
	Experimental	7.7909	1.94085	11
	Total	7.6920	2.20263	25

4.1 Statistical Analysis Pre- Vs. Post-tests

A 2 (condition: control vs. experimental – between subjects) by 2 (pre- vs. post-test, within-subjects) repeated measures ANOVA was conducted in which the dependent variable was the average one-minute CBM oral reading rate. The main effect of condition was not significant, $F(1, 23) = 1.14, p = .30, \eta^2 = .05$. The main effect of pre- vs. post-test was significant, $F(1, 23) = 21.63, p < .001, \eta^2 = .48$. The post-test scores were higher than the pre-test scores. The interaction was not significant, $F(1, 23) = .24, p = .62, \eta^2 = .01$.

A 2 (condition: control vs. experimental – between subjects) by 2 (pre- vs. post-test, within-subjects) repeated measures ANOVA was conducted in which the dependent variable was a three-minute silent reading rate from the book *The History of Nearly Everything*. The main effect of condition was not statistically significant, $F(1, 23) = .47, p = .50, \eta^2 = .02$. The main effect of pre- vs. post-test was marginally significant, $F(1, 23) = 4.24, p = .05, \eta^2 = .16$. The post-test scores were higher than the pre-test scores. The interaction was not significant, $F(1, 23) = .001, p = .98, \eta^2 = .001$.

A 2 (condition: control vs. experimental – between subjects) by 2 (pre- vs. post-test, within-subjects) repeated measures ANOVA was conducted in which the dependent variable was the average one-minute Nelson Denny silent reading rate. The main effect of condition was marginally significant, $F(1, 23) = 3.73, p = .07, \eta^2 = .14$. The experimental group's rate was faster than the control group's rate. The main effect of pre- vs. post-test was significant, $F(1, 23) = 11.30, p = .003, \eta^2 = .40$. The post-test scores were higher than the pre-test scores. The interaction was not significant, $F(1, 23) = .44, p = .51, \eta^2 = .02$.

A 2 (condition: control vs. experimental – between subjects) by 2 (pre- vs. post-test, within-subjects) repeated measures ANOVA was conducted in which the dependent variable was

the Nelson Denny reading level. The main effect of condition was not statistically significant, $F(1, 23) = .04, p = .85, \eta^2 = .002$. The main effect of pre- vs. post-test was not significant, $F(1, 23) = 2.78, p = .11, \eta^2 = .11$. The interaction was not significant, $F(1, 23) = .004, p = .95, \eta^2 = .001$.

On each of the four assessment measures, and in both the control and experimental groups, the mean for the post-test score was higher than that of the pre-test score. However, using a guided reading only format in the Reading Plus program did not cause any statistically significant increases from the pre- vs. post-test scores for the average one-minute CBM oral reading rate, the three-minute silent reading rate, or the Nelson Denny reading level. That being said, the increase from the pre- vs. post-test in the one-minute Nelson Denny silent reading rate was marginally significant.

4.2 Field Notes

4.2.1 Quantitative Field Notes

The experimental A1 and A2 groups and the control B1 and B2 groups had a total of 15 class periods for the duration of the study. Both groups lost two of those days due to the college closing as a result of inclement weather. The average absentee rate among all the participants was 23%, and their average rate of tardiness was 13%. Lack of preparedness ranged from a low of 23% to a high of 29%. The lack of preparedness involved students either not bringing their pencil or their RP worksheet on which they recorded their scores. For many students, completing RP homework assignments was not a priority as 33% of the homework lessons were not done. This along with the 23% that were not done due to absences resulted in 27% of the possible sessions not being completed.

4.2.2 Qualitative Field Notes

As the students in both groups began learning the program, they asked many different questions. The main question asked was “What all do I have to do?” A worksheet was provided each day listing the lessons to be completed with blank lines where the students recorded their scores. The second most frequently asked question was “How do I find my results so I can write them down?” The instructor answered each question, while showing them the worksheet and how to find their results if they missed them at the end of the lesson. By the fifth week of classes, when the students asked the instructor those two questions, the question was repeated back to the students while the instructor waited for them to answer. Each and every time the students were able to answer the question themselves.

In both the experimental and the control groups, after the fifth to sixth time the students worked on the RP program, frustration was often evident. This was demonstrated by body language, such as slumping of the shoulders or hanging of the head; oral noises, such as grunts or moans of displeasure; or verbal comments when the students said phrases like “I can’t do this” or “This is going too fast for me.” The instructor paid close attention to these signs and immediately dealt with them by giving words of encouragement such as, “You are doing great; your comprehension is above 70%” or “Let me sit with you during your next story and see how you go about answering your questions.” Although the instructor had to go back to the same students several times, by the end of the study, the students became independent on the program, recognizing themselves when they were struggling. At this point, the students were able to ask for help rather than show the signs of frustration as they had done previously.

Student attitudes about the Reading Plus program are listed in Tables 4.5 and 4.6.

TABLE 4.5

WHAT STUDENTS LIKE ABOUT READING PLUS

What Students Like about Reading Plus	Number of Students
I understand and comprehend better	6
I am able to read faster	17
I feel like I can read better	3
I understand more words than I used to	5
The rereads are very helpful	1
It has made me realize I can read	1

TABLE 4.6

WHAT STUDENTS DISLIKE ABOUT READING PLUS

What Students Dislike about Reading Plus	Number of Students
It reminds me of the Accelerated Reader tests	1
I can't go back once the story has started – I have to constantly pay attention	2
The program needs to give us more rereads	1
The Scan portion of PAVE – those numbers/letters go way too fast	3
It takes too long to complete a session	5
The guided readings are way too fast	8

Table 4.5 and 4.6 report the likes and dislikes of the study participants. Seventeen students reported liking the fact that the Reading Plus program helps them to be able to read faster. Six of the students reported they liked the program because they feel like they have better comprehension and five of the students feel as though they have better vocabulary skills as a result of the program. Eight of the students reported they disliked the fact that the guided reading lessons go too fast and five of the students reported disliking the program because it takes too long to complete the sessions.

CHAPTER 5

CONCLUSIONS

The intention of this study was to determine the best method of implementing the Reading Plus Guided Reading Lessons with regard to increasing developmental college students' reading levels and reading rates. The hypothesis was the students' reading rates and levels would increase more when they received the majority of their Guided Reading lessons in the guided reading format vs. the combined format of both guided and independent readings. The students' reading levels, oral reading rates, and silent reading rates were measured by a one-minute average oral CBM, a one-minute silent reading rate from the Nelson Denny Reading Test, a three-minute silent reading rate measurement from the book *The History of Nearly Everything*, and the Nelson Denny Reading Test. The data from the pre- and post-test measures did not support the hypothesis. The one-minute average oral reading CBM, three-minute silent reading rate measurement from the book *The History of Nearly Everything*, and the Nelson Denny Reading Test showed no significant difference between the experimental and control groups' pre- vs. post-test scores. The one-minute silent reading rate post-test scores from the Nelson Denny Reading test were not statistically significant; however, the p value was .07.

5.1 Limitations

There were limitations to this study, the first and foremost of which was the time constraint. With only 15 days of in-class Reading Plus sessions devoted for the study, time was of the essence. Due to inclement weather, two of those class periods were cancelled for each of the A1/A2 and the B1/B2 groups. Additionally, 27% of the possible sessions were not completed due to a 23% absenteeism rate and a 33% rate of uncompleted homework sessions.

This researcher wonders if the pre- vs. post-test gains might have shown significant increases had there been a better completion rate of Reading Plus sessions.

A second limitation of this study was the small sample size. Originally, the study began with 33 participants. The experimental groups of A1 and A2, consisted of 16 students, and the control groups of B1 and B2, consisted of 17 students. The final sample size fell to 25 students, 11 in the experimental group and 14 in the control group. Attrition was attributed to one student who completely withdrew from classes due to health reasons, four students who did not complete enough Reading Plus sessions, and two students who did not complete all of the post-test measures. Although the experimental groups pre- vs. post-test results were higher than the control groups, the difference was not significant. This researcher wonders if the sample size would have been larger would those differences have been of a significant nature.

Reading more and understanding the culture of college are two behaviors Lundell, Higbee, and Hipp (2005) reported that students need in order to be prepared for college. Many of the under-prepared students in this course exhibited neither of these behaviors. Fifty-six percent of them reported that they either disliked or hated reading, 48% of them reported reading for fun two hours or less a week, and 52% of them reported they read two hours or less per week for lessons when they were high school students. However, 72% of them felt like their reading skills were average, and 60% of them felt like their reading rate was adequate for college students. In the beginning of the study, 96% of the students reported they would complete the two hours of required homework sessions, yet in reality 33% of these lessons did not get completed. The misalignment of high school graduation vs. college readiness for under-prepared students mentioned by Lundell, Higbee, and Hipp (2005) is evident in the previous statistics. When asked, “Do you think the amount of reading and/or homework you did affected the grades you

earned in high school? Explain your answer,” one student responded, “It didn’t affect me because I still made it to college.” At the conclusion of the study, this student had an F in the course due to lack of completing in-class assignments and homework Reading Plus sessions. However, even with the limited number of Reading Plus sessions the student had completed, he was showing progress. His three-minute silent reading rate increased nine wpm, his average one-minute CBM oral reading rate increased 3.5 wpm, his one-minute Nelson Denny silent reading rate increased 15 wpm, and his Nelson Denny reading level increased 3.5 grades. Equally impressive was the fact that he had advanced to his third level within the Reading Plus program, and his independent reading rates were consistently equal to or higher than his guided reading rates.

Although Reading Plus (2011) indicates instructors can spend more class time on their curriculum because the web-based program allows students to work independently on increasing their reading rates and reading levels, anytime, anywhere, this did not appear to be the case for the students in this study. A total of 27% of the Reading Plus sessions were not completed, and had the instructor not allowed for two of the three classroom hours to be spent on Reading Plus, even less would have been accomplished.

As indicated in Tables 4.5 and 4.6 in chapter 4, the students had varying attitudes, both positively and negatively, about the Reading Plus program. Being able to read faster was the outcome the students liked the best with 17 students responding positively, yet the fact that the guided readings go too fast was the quality within the program that the students liked the least. Five of the eight students who responded that they didn’t like the fact that the guided readings went so fast also responded that what they liked best about Reading Plus was the program helped them to be able to read faster.

As previously stated in chapter 4, section 4.2.2, many students experienced frustration within the program as they began to get into their fifth and sixth lessons. For many of them, their reading rates had been steadily increasing, and they may have even advanced to their second reading level. The Reading Plus program follows one of Lowe and Holton's (2005) theories of computer-based instruction for adults because it offers many different avenues of external support from the teachers who use it. In the instructor's history with the program, students have often asked her to slow down their rates or change the program so it isn't "so hard." With much empathy and understanding of the students' progress, the instructor generally does not make these requested changes. She explains the program is challenging them as a reader, and she emphasizes they have risen up and met those challenges; thus she is not going to make changes until they demonstrate they can't meet those challenges as evidenced by low comprehension scores. To this point and time, the students have all been satisfied with that answer. The instructor offers many words of encouragement, high-fives, pats on the back, smiles, and colored printed certificates for achievement gains if the students desire them. The constant flow of words of encouragement, high-fives, pats on the back, and smiles make the students aware that the instructor is paying attention to their progress within the program, and in her opinion, this is partially what drives them to keep completing Reading Plus sessions. The instructor has often been heard to say to a student, "I believe in you! I know you can read, and I am seeing proof of it in your progress on the program. Now you just have to start believing in yourself."

Meeting some of Rochelle's et al. (2000) criteria for CBI, the Reading Plus program gives students multiple hours of active involvement in reading and it allows for frequent interaction among the students and instructor. The program also offers immediate feedback to both the students and teacher. Through the Reading Placement Appraisal, the Reading Plus

program determines exactly where students are in relation to their reading, vocabulary, and comprehension abilities and instructional plans are created, just as Voltz, Sims, and Nelson (2010) suggest is important for students' learning processes. For the instructor of the Reading Comprehension classes at HCC, the program results that are reported are detailed enough as to determine which students are meeting some of the specific course competencies. Course competencies are comparable to state standards at the K-12 level.

5.2 Future Research

Although the results of this study did not prove the hypothesis, when students use guided reading lessons, they increase their reading levels, oral reading rates, and silent reading rates at a faster rate than when they use a combination of guided and independent reading formats, there is still more research that can be done. Due to the limited time frame of this study, a similar study could be conducted entailing an entire semester, which would increase the time spent on the program. Additionally, a larger sample size could be examined. A different sample group could also be used. The Reading Plus program is useable by first grade students through adults. The study could be implemented at varying grade levels in both high school and college, with both under-prepared and prepared students. It is worth more investigation to determine the best manner in which to increase students' reading levels and reading rates while they are still able to maintain adequate comprehension.

Reading Plus (2011) claims students who complete lessons on the program will increase their reading rates and independence. It should be noted that although the hypothesis was not supported by these data, the results of this study back up that claim. The mean scores for both the experimental (A1, A2) and control (B1, B2) groups increased from pre- to post-tests in all four areas, indicating that students who complete Reading Plus Sessions increased both their reading

rates and their reading levels. The instructor for the students of this study has used the Reading Plus program for seven semesters with 13 different groups of students. She has found that her students average 19.94 hours on the program and have an increase of 2.14 grade levels as determined by the Nelson Denny Reading Test. When under-prepared students like Charlie come to her Reading Comprehension I course, completing sessions on the Reading Plus program is one opportunity the instructor gives them to help the students gain skills that may enable them to become a successful students.

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