ABSTRACT

McCallum, L. The Development of Map-Reading Skills in the Adult English as a Second Language Classroom (2008)

This project examined the development of map-reading skills in one adult ESL classroom. The study attempted to discover the amount that the students' map-reading skills could improve over the course of one five-week unit. The study was a pre-test/post-test design, with additional data provided by the students' CASAS reading test scores, attendance, previous education, and a teaching journal. Results seemed to indicate that students improved their map-reading skills. Independent variables that may have affected the study were attendance, previous education, and background knowledge of geography and maps. By the end of the unit, the students increased their ability to demonstrate basic geographical knowledge related to authentic city maps, state maps, and a United States map.

THE DEVELOPMENT OF MAP-READING SKILLS

IN THE ADULT ENGLISH AS A SECOND LANGUAGE CLASSROOM

by

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requirements for the degree of Master of Arts in English as a Second Language

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CHAPTER ONE: INTRODUCTION

How can you know where you're going if you physically don't know where you

came from or where you are now? My low-intermediate to high-intermediate adult

English as a Second Language students come from Mexico, Vietnam, Ecuador, Somalia,

Syria, Thailand, Liberia, Turkey, and China. They're bright, motivated, hard-working

individuals, but ask them to show you their countries on a world map and you'll usually

have to guide them to the correct continent before they recognize the name of their

country and point to where they are from. Before I taught map-reading in class, most of

my students couldn't read a map. Maps may be simply pictures of places on pieces of

paper, but they represent reality. If you can't read a map, it's hard to visualize where you

are and where you're going. Many of my students didn't know where their native country

and city were in relation to the U.S., Minnesota, and the Twin Cities. On a more local

level, they weren't able to tell people how they got from home to school and back each

day. Some didn't even know their own address and zip code, two basic elements of

American culture that provide information about location.

I meet new students practically every day in the Adult Basic Education program

where I teach in a suburb of St. Paul, Minnesota. Like many other teachers of adult ESL

students, I have often wondered how they manage to get around in a country whose

language and culture are foreign to them. When I dug deeper, I usually found that they

turned to others who spoke their native language to help them get settled and get around. Many of my students have family and friends they rely on, while others are here on their own. One of the goals of adult education programs is to help students participate more fully in their communities and to foster the self-reliance necessary to live and work in their new culture. As a teacher of adults, I have often thought, wouldn't it be nice if I could help all of my students to become less dependent on others and more self-reliant? What if they could learn to feel comfortable asking for directions when they are lost or read a map to find their own way to their destinations?

I've been a traveler since my parents took me on road trips around the U.S. from age eleven to seventeen. Those trips instilled in me a passionate sense of wanderlust that hasn't left me yet. My father taught me how to read a road atlas and a city map. He helped me find the highway we were on and the next town we would reach. I learned how to picture where I was and where I was going by thinking I was a bird in the air looking down at the map. He taught me that the map was just a tiny representation of my physical location. I learned how to find highways and landmarks using the map key and locate city streets with the street index. I grew up in a culture that is rich in maps, both in and out of school. Many of my adult ESL students have not grown up with this kind of experience using maps, so navigating around their new neighborhoods and cities can be challenging, especially when factoring in their limited English language skills.

My first real encounter with the joy and pain that can come with map-reading occurred during my first trip to Europe. I was nineteen, alone, and lost in Hamburg, Germany. I confidently entered the subway line that went in the opposite direction that I

wanted to go. It took me a few stops to realize I was headed in the wrong direction. I traveled back and forth across the city several times during my stay in Hamburg before I got the hang of traveling by subway. By getting lost, though, I had learned to locate my final destination on the subway map before I got on. Once I had figured out how the subway worked, I could zip around Hamburg without any hassle. I learned that maps of the world, countries, cities, trains, buses, and subways are all a little different. Since that trip to Germany, I have traveled throughout the world solo with the maps in my guidebooks of countries, cities, bus routes, and subways to guide me. I have found that being able to find my way around on my own is a pleasure that is difficult to describe or duplicate. It allows me to be independent even in countries whose languages are foreign to me.

The world is big, and I want my students to be able to explore it, even if that means being able to drive across town to run errands or taking the correct bus in the right direction to go shopping. That can mean going to another city in Minnesota to visit relatives or taking a trip to another state to see friends. Anywhere they go my students may be more confident and more independent when they travel if they can visualize where they started and where they are going to end up. I hoped that by teaching my students to familiarize themselves with maps, they too would experience the pleasure of independence and freedom that comes only with finding their way without needing someone to guide them.

Teachers of adults instruct their students to learn language skills that are different from K-12 students. The focus of beginner to intermediate level adult ESL classes is less

on academic English than on life skills, or the language skills necessary for living and working in an English-speaking country. Textbooks for teachers of adult ESL typically include samples of texts that these students may need to read and understand in their daily lives, such as forms, brochures, advertisements, charts, graphs, and maps. Teachers of adult ESL students I spoke with have noticed how many of their students have grown up in cultures where maps are not used or where map-reading is not necessary; depending on their previous education and background knowledge, they may not only need to learn the vocabulary associated with map-reading but also basic concepts of geography. Most textbooks include a couple or even a few maps for practice, but in my research I did not find a map-reading unit that has an adequate amount and variety of maps and geography basics for my students' map-reading skills to improve significantly.

How much could my students' map-reading skills improve through the direct instruction of map elements, through daily practice reading different types of maps, and through oral and written activities that involve eliciting and giving directions? In order to answer this research question, I developed my own curriculum unit based on my students' needs and apparent interests. The curriculum unit combined learning the basic elements of geography, reading a variety of maps, and participating in lessons that required students to use all four language skills. It was my hope that the students would eventually be able to read the maps they are required to read (or desire to read) both in and outside the classroom. The curriculum unit I devised for this study can be found in Appendix F in the print version of this study located in the Hamline Bush Library.

The Research Project: A Map-Reading Unit

I conducted a research project to measure the improvement in my low-intermediate to high-intermediate adult ESL students' map-reading skills because I wanted to discover how much their map-reading skills would increase from the beginning to the end of the unit. I also hoped my students would use their map-reading skills to benefit their daily lives. I developed my own curriculum unit from a variety of sources to help my students learn to read maps. I gave my students a questionnaire and a Pre-Test for the map-reading unit; instructed them on the elements of geography necessary to understand maps; guided them in reading several types of maps with a variety of questions about them; and gave the students a Post-Test and a questionnaire to measure their improvement and achievement. In general, the students were able to increase their scores from the unit Pre-Test to the unit Post-Test. Some of them were also able to correctly answer the questions about maps that are included on the Comprehensive Adult Student Assessment System (CASAS) reading test that they took before, during, and after the unit as regularly scheduled. Most importantly, though, many of them are now able to reach their destinations outside the classroom as they carry out their lives in the U.S. I hope that they will use the skills I taught them for the rest of their lives, whether they are finding their way around the U.S. or traveling in their native countries. I hope my students will be able to understand where they came from, where they are now, and where they are going—both literally and figuratively.

I successfully guided my students along this map-reading journey with the aid of the numerous materials I found and developed. Other teachers of adult ESL students can

benefit from my research, my materials, and my results by learning which aspects of the unit and which variables provided the most difficulty when tabulating the results and also which elements of the unit I would change if I were to teach the unit again. Teachers can take from my unit the assignments they think will help their students without having to hunt for several different types of maps in a variety of textbooks and other sources. Once other teachers are aware of the advantages of map-reading in and outside the ESL classroom, I hope my research project will inspire them to incorporate more map-reading into their teaching of adult ESL students.

Conclusion

How much can students' map-reading skills improve from participating in one five-week map-reading unit in an intermediate level adult ESL class? Maps are included on the standardized CASAS reading test and they are incorporated into every widely-used adult ESL textbook that is currently published. Map-reading skills are evidently useful to know while living in the U.S. It would be advantageous to students if these skills were taught intensely and frequently instead of sparingly and seldom.

Because no research projects specifically measuring the development of adult ESL students' map-reading skills exist to my knowledge, the following Literature Review will provide the reader with an overview of the instructional goals of Adult Basic Education programs in the U.S.; a brief introduction on the use of standardized tests in American classrooms and information about the most commonly-used standardized test used in adult ESL programs, the CASAS test; a general introduction to adult ESL students' characteristics and learning needs; a synopsis of competency-based education; a

summary of previous studies using authentic materials to increase reading comprehension; overviews of the reading skills and spatial intelligence that students use and develop during map-reading; and a section on the skill of map-reading.

The Methods Chapter explains how this action research study was conducted in the classroom. The organization of the study is a pre-test/post-test design, with triangulation of the results provided by the Pre-Unit and Post-Unit Questionnaires, the students' CASAS reading test scores, and my weekly teaching journals.

The Results and Discussion chapter details the outcomes of the study, including the percentage of improvement in students' unit Post-Test scores over their Pre-Test scores, changes from their Pre-Unit to their Post-Unit Questionnaires, and any improvement in their CASAS reading test scores. This chapter includes highlights of my weekly teaching journals in which I describe portions of the lessons and report on my students' progress and reactions to the lessons.

The Conclusion chapter states the limitations and implications of this study for future teaching in adult ESL classrooms. I hope that the outcome of my study encourages other teachers of adults to incorporate more map-reading into their teaching so that their students will learn to become more competent with navigating around their neighborhoods and cities. As my students' map-reading skills increased, their reading comprehension of graphs, charts, phone directories, and narratives involving directions may have also improved. They became more familiar with interpreting visual representations of abstract ideas. Additionally, many of my students experienced an

increase in self-reliance when they found local destinations on their own, as participating

members of their communities.

CHAPTER TWO: LITERATURE REVIEW

Introduction

By conducting an action research study in my classroom that measures the degree of improvement of my low-intermediate to high-intermediate adult ESL students' map-reading skills, I hoped to enhance my students' abilities to read maps, map-related visuals and vocabulary, and elicit and give directions in English. In this Literature Review, I will demonstrate that a lack of research exists concerning the teaching of map-reading to adult ESL students despite an overall consensus from textbook makers, ESL teachers, and CASAS test writers that the skill of map-reading is necessary and beneficial to adult students living in the U.S.

As I am unable to cite research studies comparable or similar to mine, this Literature Review includes an overview of the instructional goals of Adult Basic Education programs in the U.S.; an introduction to the use of standardized tests in American classrooms and information about the standardized test used for placement and advancement in most adult ESL programs, the CASAS; a general introduction to adult ESL students' characteristics and learning needs; a synopsis of competency-based education; a section on previous studies conducted using authentic materials to increase reading comprehension; summaries of the reading skills and spatial intelligence that

students utilize and hone during map-reading; and an overview of the skill of map-reading.

Goals of Adult Basic Education Programs

"The overriding common goal of all adult English learners is to make immediate use of their classroom learning in order to communicate with English speakers; learn about the culture and customs of the United States; and function effectively as individuals" (*Standards for Adult Educational ESL Programs*, 2003). Adult Basic Education programs can find out if they are successful in helping their students in the above aspects through interviews, classroom participation, and tests. Teachers of adult ESL students know that part of functioning effectively includes learning how to read a variety of texts in English that their students encounter in their daily lives; finding out how to look for, locate, and retain jobs; and being able to adequately get the goods and services they require to live in an English-speaking country.

The history of modern, government-sponsored adult education, particularly those programs for ESL students, is brief. Adult education programs have been in existence since 1964 with the passage of the Adult Education Act that focused on vocational and technical training for adults (*History of the Adult Education Act*). An amendment to that act from 1981 required more financial support for ESL programs. Further amendments from 1988 and 1991 created more programs to promote literacy in adult programs (*History of the Adult Education Act*). Until the 1990s, though, ABE programs weren't required by federal or state law to adhere to educational standards or report on their students' improvement.

Since 1991, ABE programs have been required to show quality indicators, an early form of educational standards, which demonstrate the quality of instruction in the classroom and the results thereof (*Standards for Adult Education ESL Programs*, 2003). With the passage of the Government Performance and Review Act (GPRA) in 1993, federal agencies were required to develop plans to show that they are reaching their agency goals (*National Reporting System*). From 1995 to 1998, the Division of Adult Education and Literacy (DAEL) developed a national system to gather data on adult education student outcomes. This system became the National Reporting System. Under the Workforce Investment Act (WIA) of 1998, ABE programs must show demonstrable outcomes because they are federally-funded like K-12 programs. The National Reporting System became mandatory for all federal agencies, including ABE programs, under the WIA. Currently, the NRS continues to work on "perfecting the system to demonstrate program effectiveness and improve student outcomes" (*National Reporting System*).

Since the passage of the WIA, ABE programs adjusted to the new accountability requirements despite a lack of program standards prior to 1998. "The starting point [for accountability] was not so clear for the adult literacy and basic skills system, largely because of differences between the adult and kindergarten through 12th-grade populations" (Stein in Belzer, 2007, p. 38). Due to the federal requirements of the WIA and the NRS, teachers in public school district ABE programs must demonstrate increases in student achievement on a yearly basis, just as K-12 programs do. Currently, ABE programs have to justify the funds they receive from federal and state taxes by keeping track of numbers of students in each program (such as GED, ESL, and Adult

Diploma), numbers of student-teacher contact hours, and rate of student achievement. Adult programs continue to receive public funds if they demonstrate that they are serving their populations through the annual rise in student achievement.

Besides measuring student achievement on standardized tests, ABE programs in general strive to help their students become participatory citizens in their communities by obtaining and retaining local jobs. Teachers of adult students know that their students want to improve their English for many reasons, one of which is most often finding work. The Secretary's Commission on Achieving Necessary Skills (SCANS) developed a set of competencies that adults should know and be able to do to succeed in the workplace; SCANS competencies are widely-used in workplace ESL programs (Parrish, 2004). SCANS outlines five competencies and three foundation skills as knowledge needed for successful job performance (Wise, et. al., 1990). Two of the competencies that workers need to become proficient in are Resources and Information. When students learn to become familiar with resources such as maps, directories, and other types of visual information, they have skills that will benefit them in their jobs. Students also need to acquire the Foundation skills, composed of basic language skills, thinking skills, and personal qualities, such as responsibility, self-esteem, and self-management (Wise, et. al., 1990). Learning to read maps, asking for directions, and navigating on one's own are small steps in the development of these three Foundation skills.

According to federal guidelines, student achievement must be measured and documented on a yearly basis. Adult ESL students are given a standardized reading test to see how well they can read English. They are given a similar test every forty to sixty

contact hours, depending on the program, to measure their improvement in reading skills and ability to interpret short life skills-related texts. Using standardized tests is not something relegated to K-12 schools; it is a major part of assessment in adult ESL programs as an efficient way to measure students' progress in reading skills.

Teachers who work in ABE programs are aware of the pressure on them to show student achievement regardless of outside factors such as student attendance, previous education and background knowledge, and motivation to learn English. Despite this pressure, positive results have resulted from the increased focus on accountability (Condelli in Belzer, 2007). Standardized test results can help teachers to see their individual students' strengths and weaknesses, which can aid in determining what and how they teach their students in the future in order to ensure that their students' language skills improve.

Standardized Tests in Adult Basic Education Programs

One of the quickest and most efficient ways to measure student achievement in ABE programs is by using standardized reading tests, as K-12 schools do. "By establishing clear expectations of what students should know and be able to do, standards create fairness and an opportunity to learn for all students" (Reeves, 2001, p. 12). The standards for adult ESL programs are demonstrated, in part, by the use of standardized tests for intake and improvement. The general content and multiple choice format of the tests give every student an equal opportunity to show what they know and are able to interpret.

Standardized tests remain the quickest and most reliable way of assessing student reading comprehension. Despite some negative opinions by teachers and members of the general public about standardized tests, their "validity and reliability can be documented; many studies have been done by and for test publishers that support the technical merits of the tests" (Holt & Van Duzer, 2000, p. 4). Assuming that the standardized tests are scientifically valid and reliable, "it is still true that when children score very poorly on standardized tests, this is probably not just a test-taking problem" (Calkins, et. al., 1998, p. 32). There must be some correlation between test scores and reading ability (Calkins, et. al., 1998). Standardized reading tests remain the most common way of assessing and reporting students' reading ability in adult ESL programs as well as in K-12 schools.

In current teacher education programs, teachers are taught to use the communicative method, cooperative groups, pair work, group projects, hands-on and interactive demonstrations, and alternative assessments to measure student achievement and abilities. Standardized tests use none of these teaching and assessment methods due to the time and manpower they would require to administer. The discrepancy between classroom teaching and standardized tests may be hurting students who are unfamiliar or uncomfortable with the standardized testing process. One way to increase test scores is to ensure that instruction imitates the test (Calkins, et. al., 1998). According to Calkins, et. al., if teachers incorporated more practice with strategies for reading and test-taking into the classroom, their students' test scores would rise (1998). In the map-reading unit I designed for this project, I intermittently gave multiple-choice quizzes on several of the

maps that we read to help prepare my students for the multiple-choice format of the CASAS and the unit post-test.

Unlike the standardized reading and math tests given in grades K-12, adult ESL programs measure student competencies with competency-based tests, or tests that measure student performance of English language skills based on real-life tasks. The most feasible way teachers have found to measure student performance is to give them a scientifically valid and reliable test that measures the language competencies necessary to possess and exhibit in an English-speaking country. The most widely used system of standardized tests used in adult ESL programs is the Comprehensive Adult Student Assessment Systems, CASAS tests (*CASAS*). The CASAS has been approved and validated by the U.S. Department of Education and the U.S. Department of Labor (*CASAS*). The other test used in adult ESL programs is the Basic English Skills Test (BEST). The NRS Implementation Guidelines Functioning Level Table cites both the CASAS scores and BEST scores associated with each level of ESL and can act as a guide in determining student placement (Appendix B). My ABE ESL program uses the CASAS reading test for initial placement and student improvement. In my program, the CASAS listening test is given also, though this test is not used to determine a student's initial placement level in an ESL class. The CASAS reading test score assesses a student's reading ability. With that score, the student is placed in a class with less regard to his/her listening, speaking, or writing ability. Reading comprehension is most often the skill that guides initial placement and advancement to the next level of ESL, commonly called a level gain.

The CASAS series has been specifically designed for Adult Basic Education programs for native and non-native speakers. The CASAS website contains several sections on "CASAS Competencies" which can help teachers to know what knowledge and skills the CASAS measures. The primary CASAS reading test that I used as an assessment in this research project requires students to read and interpret short narrative text, maps, charts, graphs, forms, signs, labels, and diagrams. (Two other CASAS reading tests that a few of the students took do not contain map-reading questions; thus, their map-reading skills were not measured by the CASAS.)

The CASAS website's section on "CASAS Skill Level Descriptors for ESL" includes a chart that shows which skills adult students should be able to demonstrate according to their CASAS scores (Appendix C). The chart indicates that ESL students in the low-intermediate range should be able to "read and interpret simple material on familiar topics" and those in the high-intermediate range should be able to "read and interpret simplified and some authentic material on familiar subjects" (*CASAS*).

Public school programs are required to use standardized tests to determine student progress, and the test companies that provide those tests understand the importance that schools place on the tests. Both K-12 and ABE schools must continue to use standardized tests to report student achievement, but standardized tests provide only some of the information necessary to document student progress (Holt & Van Duzer, 2000). Knowing what the standardized CASAS test includes and measures can help teachers of adult ESL focus and plan their curriculum. The CASAS test assesses students' reading abilities concerning simplified, fabricated versions of materials they are likely to encounter while

living and working in the U.S. As Holt & Van Duzer (2000) point out, "the results [of standardized tests] may not be useful or meaningful to staff members if the content of the tests is not related to the goals and curriculum of the program" (p. 5). Fortunately, the content of the CASAS test conforms to both my ABE program's ESL goals and its curriculum. Because the CASAS test is a competency-based test, the test results allowed me to see what each student understood and didn't understand on the days they took the reading test. For those students whose CASAS test contained map-reading questions, I was able to compare the individual results to each student's former test scores to determine each student's increase in reading comprehension skills in general and in map-reading skills in particular. If my students could not read the maps on the CASAS prior to the unit, I hoped that they would be able to read maps by the end of the unit. The CASAS test remains, however, only one of many assessments, both traditional and alternative, that helped me to see my students' strengths, weaknesses, and progress in their map-reading skills.

<div align="center">Adult English as a Second Language Students</div>

Adult ESL students view and interact with their adopted culture differently than children do. Factors that affect student learning include students' educational background and literacy in their native languages as well as job and family responsibilities (Parrish, 2004). They have to find housing, find jobs, take care of their families, and live in a culture that will always remain, to varying degrees, foreign to them. Adult students bring to the classroom a great deal of life experience and background knowledge that teachers

can draw from in helping them to carry out the above tasks and achieve their goals

(*Standards for Adult Educational ESL Programs*, 2003).

People of all cultures encounter the same situations in life, but their responses

differ greatly according to the culture they grew up in (Teaching Adults, 1996). Despite

differences in native cultures, "[i]t is important to understand that not all learners will

need help with learning U.S. cultural responses" (*Teaching Adults*, 1996). Some students

in adult ESL programs have lived in the U.S. for several years and are quite familiar with

American culture. Their responses to the situations they face on a daily basis will be

different from the responses of their peers who have just arrived. Adult students possess a

variety of educational backgrounds and literacy levels, from pre-literate to those with

college degrees (*Standards for Adult Educational ESL Programs*, 2003). Students who

have developed literacy and content-area knowledge in their native languages can

transfer their reading skills and knowledge to their second language (Krashen in Freeman

& Freeman, 2001). Cummins calls this a 'common underlying proficiency,' or an ability

to transfer concepts from one language to another (Cummins in Freeman & Freeman,

2001). Students that have had more education in their native languages have learned to

read, write, understand concepts, and negotiate meaning, and those students transfer those

skills to their new situation when they move to a different country and begin studying a

second language (Freeman & Freeman, 2001). According to the notion of common

underlying proficiency, possessing basic knowledge of geographical concepts will aid

students in deciphering maps in their second language. Because maps are visualizations

of reality, students may call upon their previous knowledge of maps and map-reading when asked to read maps in their adopted culture.

Taking into account all of the educational and emotional factors that affect adult students and their performance in the classroom, it is difficult for teachers to know how and what to teach to their students so they will be able to live successfully in the U.S. Numerous academic texts cite theories pertaining to the second language acquisition of children, but these theories can be faulty if applied to adults. Second language acquisition in adults does not happen in the same way as it happens in children. Adults have more knowledge of their first language, different levels of education in their native culture, and more life experience and cognitive ability than children do. Adults come to ESL classrooms with more responsibilities at home and at work and less free time to focus on learning English. All of these factors affect an adult's second language acquisition and inform adult ESL teachers' instruction as well.

Whether students have already learned other second languages or they are pre-literate and learning to read and write for the first time in English, teachers can help all of their students learn the basic language skills, called communicative competence, to live in an English-speaking culture. Communicative competence involves not only learning the vocabulary and grammar of a language. It includes being able to live, work, go shopping, find one's way around the neighborhood, and oftentimes travel from city to city. It is not enough for adult students to be able to read, write, speak, and understand English vocabulary and sentence structure. To achieve communicative competence, they need to learn how to read the culture's visual depictions, including signs, maps, building

directories, and telephone books, which will enable them to achieve their goals and live independently as productive members of their communities.

"In order to achieve communicative competence, a learner needs to become proficient in a number of areas, including language forms, social interactions, language skills, and learning strategies," Parrish states (2004, p. 9). All of these elements can and should be incorporated into the adult classroom. Students can learn how to successfully interact with others in an English-speaking culture while they are acquiring the vocabulary and grammar necessary to express their thoughts. While teaching language skills, teachers can use performance assessment in the classroom, which includes engaging scenarios, multiple tasks, and intermediate feedback (Reeves, 2001). Students should be engaged and have many opportunities to practice their English. Students should also be aware of how they are doing from day to day, not just from CASAS test to CASAS test. Teachers who give 'en route' assessments provide their students with the feedback they need to continue coming to class and learning more English (Popham, 2003). In this map-reading unit, I incorporated numerous opportunities to provide my students with 'en route' assessments to encourage my students in their learning and guide me in my teaching of the unit.

For second language acquisition to take place, adult ESL instruction should be "learner-centered, giving learners an optimal setting for acquiring the language skills they need to function within our communities" (Parrish, 2004, p. 7). Learner-centered teaching, also called meaning-based teaching by Wrigley and Guth (1992), helps adult students acquire skills that have meaning for them in their lives outside of the classroom.

While adult ESL programs must measure student achievement by standardized test scores, many programs attempt to describe goals and measure outcomes in ways that are relevant and meaningful to the students (Crandall, 1993). Using the principles of learner-centered teaching, I let my students' understanding and performance guide the pace and activities of this map-reading unit. As Auerbach (1997) points out, instruction should be "related in a meaningful way to the students' everyday reality and useful in enabling students to achieve their own purposes" (p. 14). Teachers not only need to take into account their students' reading comprehension levels but also their previous experience, their interests, and their life skills needs for living in their new culture. They can listen to their students when they tell about incidents in the past in which they needed to use certain phrases in English but didn't know the words. They can incorporate their students' needs and interests when teaching grammar, writing, reading, and speaking. They can help them learn to find their way to stores, libraries, offices, and friends' houses on their own by reading maps and knowing how to follow directions.

Reading maps of their own streets, cities, state, and country can be highly practical and meaningful for students. It can be satisfying and empowering for them to take their map-reading skills outside the classroom and use them to find their destinations or to give others directions. The map-reading unit I developed for this study is both learner-centered (devised with my students' English language needs and their current and future map-reading skills in mind) and competency-based (designed with clear instructional goals for student performance in mind).

Competency-Based Education

"A competency-based education (CBE) program is one in which the desired learning outcomes are specified in advance in written form" (McAshan, 1979, p. 30). In adult ESL programs, student achievement goals are described in rubrics published by the NRS and by CASAS. Using these rubrics as guidelines, teachers can learn which language skills their students are (or should be) competent at and which skills they need to develop to advance in the program. The statement of competencies and their measures of evaluation helps to ensure that individual student improvement is based on the achievement of those competencies rather than on the comparison of students with one another (McAshen, 1979).

In contrast to the standardized reading and math tests in K-12 schools, adult programs measure student competencies, or performance outcomes, with competency-based tests. In a more current definition by Savage, competency-based education means "a functional approach to education that emphasizes life skills and evaluates mastery of those skills according to actual learner performance" (in Crandall, 1993, p. 15). While many advanced level adult ESL classes may focus on improving students' academic skills or GED preparation, many beginner and intermediate level classes focus on life skills. Life skills are the basic language skills necessary to survive and prosper in the culture. Life skills change from culture to culture; teachers shouldn't necessarily expect their students with more native-language education will be able to cope in their new culture any better than those students with no educational background. Both types of

students can struggle with different aspects of the English language and American culture.

Two main types of competency-based literacy instruction in my unit are 'document literacy' and 'quantitative literacy' (Savage, 1993). To help students develop their document literacy, teachers ask students to use their prior knowledge and experience to the text, whether that is a map, chart, graph, work document, bill, or advertisement. Teachers then guide their students to read the text themselves, continually asking questions that are relevant and necessary to interpret the text. The second type of CBE literacy education in my unit is quantitative literacy, or reading for specific reasons to find the answers to questions (Savage, 1993). These answers are not directly stated in the text. Students must study a map, chart, graph, bill, or other type of life skills text and figure out the answer, often using visual and math skills. For example, in this map-reading unit, students developed their quantitative literacy when they practiced figuring out the number of miles from city to city using the map scale.

In competency-based education, it is not enough to know or understand a concept; students must answer, interpret, request, and demonstrate tasks (Savage, 1993). My students had the opportunity to learn and practice the life skill of map-reading in the safe environment of the ESL classroom before performing this skill in their lives outside the classroom.

Authentic Materials in the Classroom

Because adult students differ so much from children, teachers of adult ESL students tend to consider the content of the instructional materials that they focus on or

incorporate into their lessons. Beginner and intermediate level adult ESL students need to learn how to read different types of materials than K-12 ESL students do. Adult students "learn best when learning is contextualized, emphasizing communication of meaning and use of English in real situations" (*Standards for Adult Education ESL Programs*, 2003). Adult students in the beginner to intermediate levels of ESL need to learn to read forms, charts, graphs, maps, work documents, brochures, and advertisements rather than stories, essays, and longer nonfiction information found in traditional K-12 textbooks. Thus, teachers of adult students guide their students in reading both authentic materials, if available, and representations of authentic materials found in adult ESL textbooks and workbooks that their students need to read in their daily lives. Authentic materials in the classroom help to form the basis for learner-centered, competency-based curriculum, one with the students' language needs and language skills in mind.

"Authentic materials… include oral and written texts that occur naturally in the target language environment and that have not been created or edited expressly for language learners" (Larimer & Schleicher, 1999, p. v). Teachers bring authentic materials into the classroom "to make a class more interesting perhaps, to demonstrate the lesson's relevance, to highlight cultural points, or simply to give students a chance to apply what they've learned" (Vinogradov, 2004, p. 100). Once students leave the classroom, they are required by the culture around them to try to interpret authentic materials rather than the simplified, fabricated versions found in textbooks. According to Grellet (1981), it is important to use authentic texts whenever possible, "as 'simplifying' a text often results in increased difficulty because the system of references, repetition, and redundancy as

well as the discourse indicators one relies on when reading are often removed or at least significantly altered" (p. 7). Virginia Commonwealth University's *ESL Starter Kit*, a book for new ESL teachers and program directors, even includes a helpful list of authentic materials that students may encounter in English-speaking countries (1998).

For the most part, teachers of adult ESL rely on thematically-organized, integrated skills textbooks such as *Stand Out, Interchange, Collaborations,* or *Passages* as the basis for their four skills language teaching and supplement with materials from other texts. All of these textbooks include simplified and/or fabricated versions of authentic materials that students need to learn to read outside the classroom; rarely do the textbooks contain authentic, localized examples. If teachers wish to incorporate authentic materials into their lessons, they must first find the materials and then create assignments, quizzes, and activities for the students to work on in the classroom.

For my research study, I used Jenkins and Sabbagh's *Stand Out: Book 2* as the cornerstone of my map unit. *Stand Out* is the textbook series used by all of the teachers in my ABE ESL program. *Stand Out* is a CASAS-aligned series of textbooks that includes activities and materials to improve all four language skills and is geared toward adult ESL students (Jenkins & Sabbagh, 2002). Each unit focuses on a theme that includes numerous oral activities, grammar points, brief reading samples, and short writing exercises. The book's downfall is its lack of reading texts for student practice. If students need to improve their reading skills to increase their CASAS scores, in my observation many students will need more practice reading the kinds of texts that are on the CASAS tests than are represented in the *Stand Out* books.

A few studies have been conducted that are testament to the benefit of using authentic materials in the ESL classroom. Kessler, et. al, found that the use of hands-on, interactive methods and materials resulted in meaningful interaction in English (1996). The results of the study showed an improvement in both English skills and attitude toward English (Kessler, et. al., 1996). Skills and attitude are, in my opinion, closely intertwined in adult programs due to the freedom of will involved in attending classes; classes aren't mandatory as they are in grades 1 through 12. If adult students' skills can improve with the use of interactive methods and materials, they might be motivated to attend more classes. If students' attitudes toward the classes become more positive, they might attend more classes and thus their skills will improve.

Another teacher of adult ESL students brought authentic materials into her classroom to improve her students' reading skills. In 1982, verDorn taught her students English with the use of what she termed 'junk mail.' She incorporated junk mail into her classroom because it is easily accessible and suitable reading material for her adult students; she wanted to avoid teaching them with child-like texts (verDorn, 1982). Using the various types of junk mail found in the mail on a daily basis, verDorn taught her students the vocabulary and grammar that was useful for her students living in the U.S. By the end of the study, verDorn found that her students' reading, writing, and speaking skills had increased.

People who grow up in the U.S. are taught basic geographical terms and they are shown how to read maps in school and often at home. They also learn how to ask for directions, give directions, read linear guides like building and telephone directories, and

address envelopes. Teachers of adult ESL students cannot assume that their students were taught these same concepts and skills in their native countries. Adult ESL students need to learn a combination of skills that will help them know how to find a present location or a destination on a map and how to politely ask for or give others directions. When teachers incorporate authentic maps into their classroom for their students to read, interpret, and discuss, their students can see the immediate relevance to having those skills. They are able to leave the classroom and drive, walk, or take the bus to a location on a city map that they practiced reading in the classroom.

Reading for Information

All four language skills are generally represented in ABE ESL programs in the U.S. Teachers help their students improve their speaking, listening comprehension, reading, and writing. To measure a student's four skills, though, would be time-consuming and costly. In my program, as in most programs, reading skills are the skills measured for initial placement and advancement. Because my students are regularly tested on their reading skills and not on the other three language skills, I incorporated their CASAS reading test scores into my study as a way of triangulating my results.

There exist two main reasons for reading: for pleasure and for information, which includes reading to find out something or to do something with the information you get from reading (Grellet, 1981). To read a map and comprehend questions about that map, students are reading for information rather than pleasure. Reading for information requires two main types of reading: skimming and scanning (Grellet, 1981). Students need to skim the map first to acquaint themselves with the map and then scan the map to

find the information they need to answer questions or to find locations. They can acquire these skills of "competent" readers who "quickly reject the irrelevant information and find what [they are] looking for" (Grellet, 1981, p. 3).

Whether reading for pleasure or for information, reading is an active skill, one which involves "guessing, predicting, checking, and asking oneself questions" (Grellet, 1981, p. 8). Skimming and scanning are skills that adult students can be taught. Later, they may develop skills to read English more fluently. They may go on to read longer articles, newspapers, and stories. Even then, though, they will still use their skimming and scanning skills. They will discover the main idea of the text, and they will be able to find specific pieces of information if they want to or need to do so. Skimming and scanning are basic reading skills that students will utilize and build on as they learn to interpret different types of maps, symbols, and accompanying text in the map-reading unit.

Spatial Intelligence

Along with reading for information, students who learn how to read maps activate their spatial intelligence, one of the eight Multiple Intelligences proposed by Howard Gardner (1983). Students visualize the placement of people and objects on paper. Golledge and Stimson identified several "geographic spatial abilities" that people apply to map-reading (in Lobben, 2007, p. 66). Some of these are the ability to perceive three-dimensional structures in two dimensions and vice versa," "give and comprehend directional and distance estimates," and "orient oneself with respect to local, relational, or global frames of reference" (Golledge & Stimson in Lobben, 2007, p. 66).

In order for people to orient themselves and discuss location, they "have to pick a reference frame that can reliably identified by different people… and then specify an object's direction and distance relative to it," according to Pinker (2007, p. 143). Pinker (2007) describes four frames of reference that people use to define location. When people use a geocentric reference frame, they define location according to a north-south or east-west axis plus landmarks. When using an object-centered reference frame, people describe objects relative to their own parts. An egocentric reference frame is used when people envision themselves as axes and describe location in relation to their own bodies. Finally, a gravity-based frame is used to contrast words like 'above' with 'below.' Each of these frames of reference has advantages and disadvantages, and people may use all of them, depending on the type of object or location they are referring to. More notably, however, people's reference frames may differ widely according to the culture in which they were raised (Pinker 2007). The reference frames they may use in their native cultures may be different from the reference frame they need to use at a particular moment in the U.S.

Using one's spatial intelligence to visualize the placement of people, objects, or places on paper is a new concept for some ESL students; others are visual learners and the tasks associated with map-reading are less difficult for them. Either way, different map-readers generally use different strategies to accomplish the same task (Lobben, 2007). Students from different native cultures may use frames of reference that are different from those used in the U.S.

To study the cognitive strategies that students use to find location would not be possible, as "cognitive processes are not easily observed" (Lobben, 2007, p. 83). In addition, most people are probably quite unaware of the frame of reference they used to locate objects or information on a map. Teachers can, however, analyze students' verbal and written answers to determine how their spatial intelligence and frames of reference influence their map-reading skills.

The Skill of Reading Maps

American culture is a culture filled with maps, signs, and visual representations that require map-reading skills and the background knowledge to understand them. In the U.S., elementary and middle school students learn basic geographical concepts in school, from family members, and oftentimes through experience. Some people who grow up in American culture are far more comfortable reading maps than others are, while some who claim that they can't read maps probably could if they needed to because they have been taught basic geographical concepts in school. The same cannot be said of all of the immigrants and refugees who come to the U.S. as adults. Their experience with map-reading differs greatly not only according to their educational background and their life experience, but also according to the culture in which they were raised. As Witkin, et. al., contend, the way one perceives the world is influenced by environmental and "sociocultural" factors (in Hvitfeldt, 1985, p. 27). As a simplistic example, a person who grows up in the flat plains may not know how to recognize mountains on a map until the person is taught what mountains are, what a map key is, and how to recognize the symbol for mountains on the map using the map key.

Teachers cannot assume that their students will understand all of the symbols on maps and map keys that are commonly found on maps in the U.S. The understanding and interpretation of visual depictions such as maps themselves, their symbols, streets, buildings, and grid format may be quite different from anything students have seen before, regardless of previous education or familiarity with maps in their native cultures. After all, maps differ in their form and appearance across cultures (Gauvain, 2000). They "reflect the way people think about the spatial world and contain the information that people want to think about the spatial world," Tversky (2000) states, reinforcing the notion that a culture's maps reflect the culture itself (p. 282). The types of maps that are ubiquitous in the U.S. are not always the types that are present in other cultures.

Hvitfeldt differentiates between two major ways that visuals are interpreted by people: iconic and symbolic (1985). Traditional, preliterate societies tend to learn about the world through actual depictions of elements and events, while modern, literate societies are used to learning through the use of symbols (Hvitfeldt, 1985). In American culture, visuals such as maps, which are symbols of physical places, as well as map keys with symbols for those maps, are commonly used to convey information. Additionally, the linear, grid-like appearance and the use of a map key and a scale for inches and miles may be foreign to someone who grew up with maps in the form of freeform drawings or maps without reference to direction or scale. As Uttal (2000) states, "there may be cross-cultural differences in how geographic-scale information is represented and used" (p. 251).

In one study, Evans, a teacher of middle and high school ESL students, noticed that her students' concepts of geography and their previous map-reading experience varied widely according to both their educational and cultural backgrounds. In her article, Evans describes the challenges of teaching a unit on Australian geography to newcomer students when the students possessed little or no background knowledge about basic geography before they entered mainstream middle and high school (Evans in Clegg, 1996). The fundamental geographical concepts that English-speaking cultures deem important—the elements that Evans had to teach for her students to be successful in their mainstream classes—may simply be different from those that her students grew up knowing.

While this study is based on the progress of adult students in the U.S. rather than middle- and high-school students in Australia, the idea remains the same: students new to a culture will have more trouble grasping the vocabulary and new information if those concepts are completely new to them rather than concepts about which they are knowledgeable. Because this study was conducted with students from different cultural and educational backgrounds, I taught them all the basic elements of geography, maps, and directions along with the reading skills to interpret several different types of maps. At the end of the unit, I obtained some insight into what roles their previous education, background knowledge, and native culture played in the development of their map-reading skills.

Cultures not only differ in their production and usage of maps, but the people of one culture may place much more importance on maps as tools than another culture.

"[C]ultures construct or adopt tools that are uniquely suited to their own needs, skills, and resources" (Gauvain, 2000, p. 269). Students who move to the U.S. may find the presence of maps is much more ubiquitous than it was in their native cultures. Because reading maps is a literacy practice in American culture, they may find that their language training will be enriched when they learn to become familiar, or even comfortable, with reading maps.

"[M]aps can alter how we think about the represented information…. [W]e may realize from looking at a map that our hometown is much closer to, or farther from, another city than we previously thought" (Uttal, 2000, p. 247). Those realizations about our world can only serve to strengthen adult ESL students' education as they mesh their previous knowledge and experience with a new language, a new culture, and a new way of looking at the world, both physically and theoretically.

Conclusion

Teachers of adult ESL students guide their students in reading and interpreting the texts they encounter while living in the U.S. Smoke reminds us, though, that literacy practices vary widely around the world, depending on the social context of a place (1998). Along with life experience, adult students bring to the classroom a wide range of language abilities. Those abilities depend greatly on the literacy education they had prior to moving to the U.S. Literacy education, which is the focus of adult ESL programs, involves teaching students not only how to decode words but also how to interpret the visual representations that students see every day in the U.S.

A writer's words have meaning to a reader when the meaning of those words is recreated later in the mind of the reader (Kruidinier, 2002). Simply decoding the words on a map does students no good if they don't understand they are seeing a visual representation of a physical space. If they can recreate that space in their heads, they will truly be reading and understanding a map.

Literacy education involves more than only teaching students to read and write (Smoke, 1998). It means teaching them how to recognize and understand the symbols and spatial areas represented on a piece of paper. After all, "maps provide a perspective that can be difficult to acquire from direct experience navigating in the world" (Uttal, 2000, p. 247). Maps can help students see where they have been, where they are now, and where they want to go.

In the following Methods chapter, I explain how I taught my students how to interpret maps and map-related elements in a unit that incorporated all four language skills. I describe the quantitative and qualitative methods I used to collect my data and the participants of the study. I also clarify what I hoped to accomplish with the results of the study.

CHAPTER THREE: METHODS

Introduction and Research Question

Reading maps is a valuable skill that can help people to find out where they are

and where they are going. The ability to read maps can increase people's confidence and

independence when they know how to decipher a map. Having noticed that many of my

adult ESL students struggle with map-reading in the classroom and on the CASAS

reading test, I conducted this research project to measure the development of my low-

intermediate to high-intermediate adult ESL students' navigational map-reading skills. I

wanted to discover how much their ability to read maps and utilize map-related

vocabulary could improve. While this is not the main purpose of my study, I recognize

the value of current standardized testing in ABE programs, and I also wanted to measure

any increases in my students' CASAS reading scores could increase through the practice

of reading maps and taking multiple choice quizzes in the classroom.

By giving my students a survey and a Pre-Test, I determined the skill level and

personal opinions of my students' own map-reading skills. I supplemented the "Our

Community" unit in the ESL textbook *Stand Out: Book 2* with maps from other ESL

textbooks and authentic maps from outside sources. I created several multiple-choice

quizzes about various maps and bus schedules and gave these to my students for

additional practice on completing multiple-choice tests such as the CASAS. Finally, I

gave my students a post-test and a post-unit questionnaire about their map-reading skills.

I also measured their CASAS reading scores before, during, and after the unit in the

hopes that they would be able to correctly answer the map questions on the CASAS

reading test. Additionally, I wrote weekly teaching journals about my students' reactions,

progress, and difficulties throughout the unit.

I utilized three types of quantitative data (Pre-Test/Post-Test scores, Pre-

Unit/Post-Unit questionnaires, and CASAS reading tests) and one type of qualitative data

(weekly teaching journals). By combining these different methods of data collection, I

hoped to gain insight into the ways that my students' map-reading skills might improve

and what types of curriculum might help them to become better map readers both in and

outside the classroom.

Overview of the Research Methods

For this study, I conducted action research in my classroom. I altered my teaching

methods and incorporated additional map-related elements in my curriculum in order to

measure my students' improvement in reading maps and map-related directions. I used

both quantitative and qualitative methods of data collection for this study.

I gave the students a discrete-item, multiple-choice Pre-Test that required them to

answer questions about city maps and bus maps, interpret directions in a letter, and read a

phone directory. I gave the students the same test as a Post-Test in order to accurately

compare the results of the test.

Using a closed-form, Likert-scale questionnaire, I determined my students'

perceived abilities towards reading maps and asking for directions in English. I wanted to

find out how they felt about their map-reading skills, and whether they ever read maps in their native countries. I asked them if they thought they could read maps now, if they knew what the directions north, south, east, and west meant, and how comfortable they felt with asking for and giving directions to people in English. I gave a similar questionnaire to the students at the end of the unit to determine how they felt about their own improvement.

I ascertained whether they were able to correctly answer multiple-choice questions about maps by documenting their CASAS reading scores prior to the map-reading unit, during the unit, and after the unit.

I kept a weekly journal that details which types of maps and activities we did during each week and how the students responded to them. I include portions of this journal in my Results and Discussion chapter, giving the reader a clearer idea of which activities went well and which activities were difficult for me to teach and for my students to learn. I also comment on the independent variables that affected the study throughout the five-week unit.

Research Paradigm: Quantitative and Qualitative Research

I conducted action research in my adult ESL classroom. Action research is a method of conducting research by which teachers first ask what they can do to benefit their teachers in their classroom. When conducting action research in the classroom, teachers alter their teaching methods to help their students succeed in specific areas. According to Mackey and Gass (2005), "classroom research can enhance our understanding of how to implement effective ways of improving learners' second

language skills" (p. 186). Action research in the classroom represents an attitude in which "the practitioner is engaged in critical reflection on ideas, the informed application and experimentation of ideas in practice, and the critical evaluation of the outcomes of such application" (Nunan in Richards & Nunan, 1990, p. 63). Action research encourages self-directed teachers to further their own professional development. With the underlying concept of action research in mind, I decided to use my adult ESL students' linguistic needs, classroom participation, and map-reading development to inform my own teaching during and after the map-reading unit I devised.

I used three types of quantitative data collection and one type of qualitative data collection for this study. I used a pre-test/post-test design for this research study, as I wanted to have a baseline of general student map-reading skills before I began the unit. A pre-test/post-test design allows the researcher to create a more valid and reliable research study than one of simply a post-test design (Mackey & Gass, 2005). Beginning the unit with a general baseline of map-reading skills as well as looking at each individual student's Pre-Test, I was able to more clearly measure the increase in map-reading skills by the class in general and by each student. The basis for my curriculum unit was Chapter 5 ("Our Community") in *Stand Out: Book 2*. *Stand Out* is an adult ESL textbook series which utilizes the communicative method to help students learn English skills while living in the U.S. I created a Pre-Test/Post-Test using the *Stand Out* test bank. I cut and pasted different types of maps and wrote up multiple-choice test questions for my Pre-Test that were similar to those in the test bank. My Pre-Test had three maps, one bus schedule and route, one letter discussing directions, and one phone directory. These

elements are included in the "Our Community" chapter in *Stand Out: Book 2*, and

therefore I included them in the Pre-Test/Post-Test. I created a test to measure skills that I

knew I would be teaching throughout the unit. This technique allowed my study to be as

internally valid as possible.

For my second type of data collection, I measured their opinions about reading

maps and their reactions to using maps with closed-form, Likert-scale Pre-Unit and Post-

Unit Questionnaires. "By restricting the answer set, it is easy to calculate… data over the

whole group or over any subgroup of participants" (*Questionnaire Design*). Using

questionnaires to gauge my students' perceived levels of ability enabled me to easily

measure the changes they felt about map-reading at the beginning and the end of the unit.

The third method of data collection I incorporated into my unit was the use of

several teacher-created multiple-choice quizzes. Adult students in ABE ESL programs

often take CASAS reading tests to gauge their reading comprehension levels, and

CASAS reading tests consist of a multiple-choice format. Too often, instruction in any

classroom fails to match the method by which students are tested. The students may do

poorly on standardized tests, for example, if they are not familiar with taking

standardized tests and have little knowledge of how to choose one correct answer for

multiple-choice questions. Ensuring that the assessments conducted in class are similar in

format to the standardized tests that students must take on a regular basis as part of the

ABE program is one way to increase those standardized test scores (Calkins, et. al.,

1998). Teachers can incorporate brief types of standardized assessments into their lessons

and help their students to understand how to take such tests. In this way, the students will

be more prepared to take a regularly-scheduled standardized test and not be confused by its format or instructions. I instructed my students on how to correctly read and select answers on multiple-choice quizzes and tests. The students received more practice than they normally would have with answering multiple-choice questions. I attempted to measure the students' improvement on standardized tests by comparing the results of their bi-monthly CASAS reading tests before, during, and after the unit. The additional practice of answering multiple-choice questions can help facilitate answering the CASAS reading test questions more successfully.

The fourth method of data collection I utilized in this study was qualitative. Oftentimes, quantitative and qualitative methods need not be exclusive of one another but can work side-by-side in second language research to complement each other in what is a highly complex field (Mackey & Gass, 2005). I wrote weekly teaching journals to reflect on the lessons that I taught and how the students reacted and participated during those lessons. The qualitative measure of the teaching journal allowed me to more clearly see my students' challenges and progress throughout the unit. Their struggles and successes are recorded in the teaching journals in a manner not represented in the qualitative data collection methods of tests or questionnaires.

To further explain my research paradigm, the following is information given about the organization of the curriculum unit. I wanted my students to learn to read a variety of maps they encountered, both in and outside the classroom. I began the unit by introducing simplified maps from ESL textbooks that helped the students learn the basic elements of maps and geography. As Vinogradov (2004) notes, "there is a time for

simplified or unauthentic materials, whether published or teacher-created, to help

students gain key language skills" (p. 100-101). As the unit progressed, I built on the

students' *schema*, or previous knowledge and experience, to increase their understanding

of the authentic maps that I introduced to them. As the students activated their *schema*,

they were less likely to become overwhelmed or confused by the different types of maps

I presented to them (Vinogradov, 2004). Many of them realized that they already

possessed some or much of the knowledge required to read maps successfully in English.

I helped students recognize that they already knew some of the content and vocabulary as

well. This validated and extended what they knew, shifting the focus away from their

weaknesses and towards their strengths (Auerbach, 1997).

Throughout the unit, I instructed my students on how to interpret state and city

maps, addresses, directions, bus maps and charts, subway maps, phone directories, and

the geographical elements and vocabulary necessary to successfully complete the unit if

they attended class regularly. The students had numerous opportunities to practice their

map-reading skills with a variety of maps from adult ESL textbooks and workbooks.

They learned to read and interpret authentic materials about their communities. They

completed accompanying assignments that I devised for those authentic materials.

Although I introduced authentic materials throughout the unit, I gradually taught with

fewer simplified maps and more authentic maps in order to make the lessons useful and

practical for my students living in the U.S. They learned to decipher maps from their

immediate area such as city maps. They also learned to read state highway maps and a

U.S. map. "Authentic materials make excellent cumulative activities" (Vinogradov, 2004,

p. 102). By the end of the unit, the students had the knowledge and ability to read maps that were relevant to their lives outside the classroom.

Data Collection

Participants

The participants in my study were those students who had been placed in my low-intermediate to high-intermediate adult ESL class according to their initial CASAS reading test given to them at the time of intake. The twenty-three participants included five students from Mexico, four from Vietnam, three from Ecuador, three from Somalia, three from Syria, two from Thailand, one from Liberia, one from Turkey, and one from China. Their native languages are Spanish, Vietnamese, Somali, Arabic, Thai, Standard Liberian English, Turkish, and Chinese.

The students' English reading levels ranged from scores of 203 to 215 on their initial CASAS reading test, which placed them in the low-intermediate to high-intermediate range. Their educational backgrounds and language skills varied widely. Some of the students had twelve or sixteen years of schooling in their native countries, while others had only six years. Table 4.1 on page 54 indicates the students' native countries, native languages, years of education in their native countries, and year of education in the U.S.

Several students had learned some English before they moved to the U.S., while others had never studied a foreign language before entering a beginner level ESL class. Some students had been studying in the ABE ESL school for several months, while

others had just joined the class. Their placement in the class was determined by their

CASAS reading level, not by any previous instruction in this school or any other school.

A few students had very limited previous instruction on reading and writing in

their native language. Those students whose oral English was more proficient than their

written English tended to struggle with the grammar and writing in English, while those

students who had studied English grammar in their native countries needed more practice

with their speaking and listening comprehension skills in English. All the students needed

help improving all four language skills of reading, writing, speaking, and listening, but to

various extents.

<u>Setting</u>

This research study took place in an English as a Second Language class in an

Adult Basic Education school in a Midwestern suburb of a large metropolitan area. The

ABE school serves the needs of immigrants and refugees who live within the immediate

school district, which encompasses three suburbs, and nearby school districts as well. The

school's classes and services are free to those adults who live in the surrounding

communities who wish to attend classes to improve their English or earn high school

credit.

The lessons took place in a two-and-a-half-hour, low-intermediate to high-

intermediate ESL class. We met four days a week, from Monday to Thursday. I taught

the unit for five weeks in January, February, and March of 2008. I assessed my students'

skills daily, on each assignment and activity they completed.

Data Collection Technique 1: Pre-Test/Post-Test

I chose to conduct this action research study using a pre-test/post-test design due to the independent variables that are present when teaching adults. In order for the study to be as reliable as possible, I gave the students a Pre-Test to see where each student's individual map-reading skills lie. At the end of the unit, I gave the students the same test as a Post-Test to check how much improvement there was. Outside variables of attendance, previous knowledge and experience using maps, education in the students' native languages and in English, and motivation to learn to read maps all played large roles in the study. By focusing on a straightforward pre-test/post-test design for this study, I attempted to minimize the impact of the independence variables as much as possible. The Pre-Test/Post-Test and its Answer Key can be found in Appendix E.

Data Collection Technique 2: Pre-Unit/Post-Unit Questionnaire

Before I could teach my students how to decipher maps in English, I needed to find out how much they already knew about reading maps, how comfortable they were with reading them, and how well they knew the English language skills required to properly use maps and talk about directions. I considered all of these elements when I devised my methods of data collection for this project. I used four types of data collection to measure my students' improvement. Three types of data collection were quantitative and one type was qualitative.

In order to answer my research question concerning how to develop my students' map-reading skills, I first needed to find out what my students already knew about reading maps and how competent they were when asking for, giving, and reading

directions in English. I gave my students a Pre-Unit Questionnaire that asked the

students' own opinions about how well they thought they knew how to give directions,

read maps, and generally find their way around without help from others. The Pre-Unit

Questionnaire gave me an idea about what skills I should focus on during the unit. The

Post-Unit Questionnaire results allowed me to see how much my students thought they

had improved and how comfortable they felt reading maps and giving directions after the

unit was finished. The Pre-Unit and Post-Unit Questionnaires and their respective tallies

can be found in Appendix D.

Data Collection Technique 3: CASAS Reading Tests

The CASAS reading test determines my adult ESL students' initial placement and

advancement in the ABE ESL program. I consulted my students' CASAS reading tests to

determine which sections were most troublesome for them. I attempted to help them

increase their scores on the CASAS in two ways: I taught them specific map-reading

strategies to help them correctly answer the map questions on the CASAS reading tests,

and I hoped that their overall CASAS reading scores would increase if they had

additional practice answering multiple choice questions throughout the unit. I

periodically gave the students multiple choice quizzes and reviewed with them how to

find one correct answer for such quizzes. I measured changes in their CASAS reading

scores before, during, and after the map-reading unit.

Data Collection Technique 4: Weekly Teaching Journals

My fourth form of data collection was a qualitative measure of the unit through

weekly teaching journals. I chronicled the activities the students did, their reactions and

progress throughout the unit, and how I felt about teaching the unit with the curriculum materials I had prepared. The teaching journals are included in this study as a form of reflection on my own teaching and for other ESL teachers to see as well if they teach map-reading in their classrooms. My Teaching Journals can be found in Appendix H in the print version of this capstone located in Hamline Bush Library.

Procedure

<u>Participants</u>

The participants in my study were those students who had been placed in my low-intermediate to high-intermediate adult ESL class according to their initial CASAS reading test given to them at the time of intake. Twenty-three students participated in the study. The students' English reading levels ranged from scores of 203 to 215 on their initial CASAS reading test, which placed them in the low-intermediate to high-intermediate range. The students were instructed as they normally would be if the study had not taken place. That is, I taught ESL reading, writing, speaking, and listening skills to the students to help them improve their English skills. I observed the students answering written and oral questions and interacting with partners and in groups. The participants were not harmed in the study.

<u>Materials</u>

I taught Unit 5 ("Our Community") from *Stand Out: Book 2* for low-intermediate adult ESL students as the core text for this study. *Stand Out* is a CASAS-aligned adult ESL textbook series comprised of useful and interesting texts and activities that help adult students improve their English. The textbook's units are organized thematically,

with grammar instruction, speaking and listening activities, and brief written texts included. The series contains several of Parrish's (2004) requirements for using a textbook as the basis for adult ESL classroom instruction: themes and activities activate and validate prior knowledge; activities include individual, pair, and group work; activities can be learner-centered or learner-directed, depending on the abilities and motivation of the students; many of the interactions and tasks are authentic; and students learn and practice strategies that they can use outside of class. Grammar instruction, though brief, is integrated into each lesson, and several basic structures that students need to know in order to obtain communicative competence are explained through graphs and charts. Grammar worksheets are available in a supplemental book for teachers to copy and use at their discretion.

The unit on "Our Community" that I focused on for this study contains only four examples of simplified, fabricated maps in the seventeen-page unit. In order to make the unit more complete and more relevant for my students living in Minnesota, I supplemented the unit with both authentic materials and simplified maps from other textbooks and workbooks. Curriculum materials, both teacher-created and from ESL textbooks, are located in Appendix F in the print version of this capstone located in the Hamline Bush Library.

Pre-test

The six-page unit Pre-Test was given to the students in a group setting. I taught the students the prefixes "pre" and "post." I explained that I was going to give them a Pre-Test to determine how well they could read maps. The students reacted poorly to the

Pre-Test. They tried very hard, even though I explained again and again that there would be questions on the test that they might not be able to answer because we hadn't studied them yet. When a few absent students came in the next day, I gave them the Pre-Test and had a volunteer supervise them to make sure they didn't discuss among themselves or ask him for answers.

<u>Post-test</u>

I gave the students the unit Post-Test to determine their level of improvement on map-reading. I reminded the students of the Pre-Test. I explained that they had studied all of the elements of the test throughout the unit and they would be able to do much better on the Post-Test than they did on the Pre-Test. The students understood the concept of the Pre-Test/Post-Test after I had graded the Post-Tests and handed back both tests together. Some students had only taken one of the tests; others had taken both and could see their improvement. Given the independent factors involved with teaching adult students, the Pre-Test/Post-Test design was one way to measure improvement for an entire class in a reliable way.

<p align="center">Data Analysis</p>

I gave my students a Pre-Unit Questionnaire that began with a few questions about their native country, native language, and years of education in their native countries and in the U.S. The remainder of the Pre-Unit Questionnaire was composed of statements about reading maps and finding their way around. The students answered the Questionnaire statements by circling their answers on a Likert scale. I tallied the results

of the Pre-Unit Questionnaire in order to compare the students' answers with the Post-Unit Questionnaire.

To establish a baseline of map-reading skills for each student, I gave the students a Pre-Test. The students were required to try to answer questions about maps, bus schedules, and a letter describing directions in a fake city. I gave the students the same test as Post-Test at the end of the unit in order to directly compare their results and improvement. The students were able to compare their two tests and see which questions they struggled with at the beginning and at the end of the unit.

For my third method of data collection, I recorded my students' CASAS reading scores. The students took the test at regularly scheduled times without regard to the timing or progress of this study. Any improvement in CASAS reading scores might or might not have been attributed to the additional instruction concerning multiple-choice questions and map questions similar to those on the CASAS reading test.

Finally, I wrote weekly teaching journals in order to keep up-to-date information and reactions about how the unit was progressing. I hoped to note the successes and struggles that my students were having with the unit regarding specific activities, assignments, or types of maps they were learning to read. My teaching journal was a good way for me to record the progress of the unit on a weekly basis while each class was still fresh in my memory. Writing weekly teaching journals also served as a way for me to reflect on each week and plan for the upcoming week's lessons.

Verification of Data

In order to ensure the internal validity of the data of this study, I used four methods of data collection. I used three quantitative methods and one qualitative method of data collection instead of just one method.

I collected my data in an organized, methodical manner. I prepared a Pre-Unit/Post-Unit Questionnaire that required my students to answer how well they felt about their own map-reading skills using a Likert scale to make tallying their answers more reliable. I created a Pre-Test/Post-Test with elements of the maps from the *Stand Out: Book 2* test bank and from maps from other textbooks. I ensured that the unit I taught incorporated the elements on the Pre-Test/Post-Test so my students should have been able to improve their scores by the end of the unit. I recorded my students' CASAS reading test scores and noted how many of the map questions they got correct before, during, and after the unit. Finally, I wrote weekly teaching journals to record the progress and struggles of each week's lessons while I could still remember exactly how the lessons went, how the students reacted to the activities, and how the week's events might inspire me to alter my plans for the upcoming week.

Ethics

This study employed the following safeguards to protect informants' rights:

1. The students were informed of their right to participate or not participate in this study. They signed consent forms if they chose to participate in the study. The students were not harmed by participating in the study, as this was action research conducted in the

classroom under normal classroom conditions. A sample Student Consent Form can be found in Appendix A.

2. All student test scores were reported in the results of this study by student numbers only. Information about the students' native countries and languages, and level of native language and ESL education is given for purposes of interest and comparison only. No student names are identified in the results of the study.

3. All student samples collected had the names of the students covered and copied anonymously for purposes of seeing student samples only. No students were targeted especially in the collection of samples or in the teaching of the unit.

Conclusion

This chapter explained in detail the research methodology and data collection strategies of this study. It also described the participants and setting of the study.

I hoped that the introduction of geographical terms, phrases to use when eliciting and giving directions in English, and the continual reading of different types of maps throughout the unit would allow my students the practice they needed to increase their unit Post-Test scores and their CASAS reading test scores. Moreover, I wished to instill in my students the ability and confidence to go places that they might not have gone previously. This could in turn help to increase their English language skills if they do venture out on their own and come into contact with both native and non-native English speakers.

The following Results chapter contains the outcomes of the study. I include the quantitative data of the students' unit Pre-Test and Post-Test results, their Pre-Unit and

Post-Unit questionnaire results, and their CASAS reading test scores. Highlights of my

weekly teaching journals are also included for the reader's interest. Finally, I attempt to

analyze the correlations between student attendance and Post-Test scores as well as

correlations between their education levels and Post-Test scores.

The Conclusion chapter states the implications of this research study for future

teaching of map-reading skills in the adult ESL classroom. I reflect on the process and the

results of my study. I express my thoughts about the overall benefits of the study to my

students and which parts of the unit I would change if I were to conduct such a study

again.

CHAPTER FOUR: RESULTS AND DISCUSSION

Introduction

This study took place in my low-intermediate to high-intermediate adult ESL

classroom. The study was an action research project that entailed compiling three types of

quantitative data (Pre-Test/Post-Test results, CASAS reading test results, and

questionnaires) and one type of qualitative data (weekly teaching journals) to discover

how much improvement my students could attain in their map-reading skills. Overall, the

students improved their map-reading skills and learned basic geographical concepts. The

results vary widely according to the independent variables of attendance, previous

education, and previous map-reading knowledge. The study focused on answering the

following research question: How much can students' map-reading skills improve from

participating in a five-week map-reading unit?

Pre-Test/Post-Test Results

This study had a pre-test/post-test design. I gave my adult ESL students the map-

reading Pre-Test and instructed them to try their best on it without any of my help. At the

end of the unit, I gave them the same test as the unit Post-Test (Appendix E). The

students demonstrated any improvement in their map-related knowledge and skills that

they had acquired during the unit. The results of the Pre-Test and the Post-Test for all

twenty-three students are shown in Table 4.1. The average percentage of increase from

the Pre-Test to the Post-Test for all of the students was 16.8%.

Table 4.1

Pre-Test and Post-Test Results for All Participants

Student	Native Country and Language	Amount of Native Language Education	Amount of Education in the U.S.	Pre-Test Score % Correct	Post-Test Score % Correct	Increase in % Correct from Pre-Test to Post-Test
1	Somalia; Somali	8 years	4 years		47	N/A
2	Somalia; Somali	6 years	4 years	43	53	10
3	Syria; Arabic	16 years	3 months	87		N/A
4	Ecuador; Spanish	6 years	1 year	23	73	50
5	Syria; Arabic	12 years	1 week	70		N/A
6	Syria; Arabic	15 years	1 week	90		N/A
7	Mexico; Spanish	6 years	1 year	20	83	63
8	Ecuador; Spanish	12 years	2 months	67		N/A
9	Mexico; Spanish	16 years	1 month		70	N/A
10	Mexico; Spanish	6 years	1 year	20	73	50
11	China; Chinese	7 years	6 years	57	73	16
12	Liberia; Standard Liberian English	10 years	4 months	50	70	20
13	Ecuador; Spanish	6 years	2 years	50	53	3
14	Turkey; Turkish	11 years	5 months		83	N/A
15	Mexico; Spanish	6 years	1 month	43	93	50
16	Mexico; Spanish	6 years	1 year		73	N/A
17	Vietnam; Vietnamese	12 years	2 months		93	N/A
18	Vietnam; Vietnamese	16 years	3 months	87	87	0
19	Vietnam; Vietnamese	16 years	2 months	93	97	4
20	Thailand; Thai	16 years	2 months	80	87	7
21	Somalia; Somali	6 years	1 year	53	63	10
22	Thailand; Thai	16 years	5 years	70	93	23
23	Vietnam; Vietnamese	12 years	6 months	63	80	17
				Avg: 59.2	Avg: 76	Avg: 16.8

Due to attrition, some of the students who took the Post-Test, however, were

different ones than those who took the Pre-Test. The average percentage increase for the

fourteen students who completed both the Pre-Test and the Post-Test was 23.3%, as

shown in Table 4.2. The fourteen students' individual results are shown in Figure 4.1.

Table 4.2

Pre-Test and Post-Test Results for Students Completing the Pre-Test and Post-Test

Student	Native Country and Language	Amount of Native Language Education	Amount of Education in the U.S.	Pre-Test Score % Correct	Post-Test Score % Correct	Increase in % Correct from Pre-Test to Post-Test
2	Somalia; Somali	6 years	4 years	43	53	10
4	Ecuador; Spanish	6 years	1 year	23	73	50
7	Mexico; Spanish	6 years	1 year	20	83	63
10	Mexico; Spanish	6 years	1 year	20	73	50
11	China; Chinese	7 years	6 years	57	73	16
12	Liberia; Standard Liberian English	10 years	4 months	50	70	20
13	Ecuador; Spanish	6 years	2 years	50	53	3
15	Mexico; Spanish	6 years	1 month	43	93	50
18	Vietnam; Vietnamese	16 years	3 months	87	87	0
19	Vietnam; Vietnamese	16 years	2 months	93	97	4
20	Thailand; Thai	16 years	2 months	80	87	7
21	Somalia; Somali	6 years	1 year	53	63	10
22	Thailand; Thai	16 years	5 years	70	93	23
23	Vietnam; Vietnamese	12 years	6 months	63	80	17
				Avg: 53.7	Avg: 77	Avg: 23.3
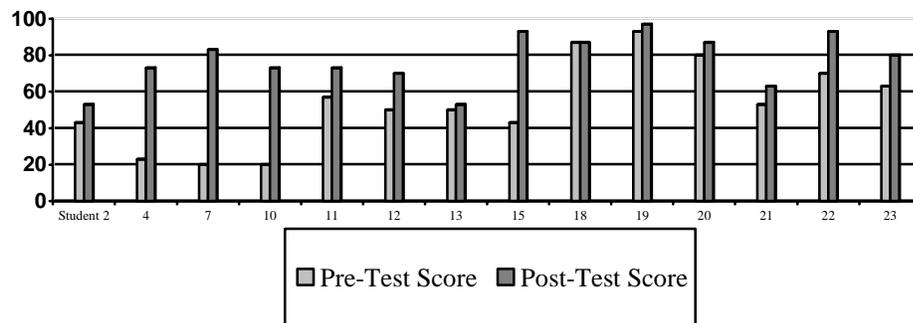
Graph 4.1. Pre-Test and Post-Test Results for Students Completing the Pre-Test and Post-Test

Table 4.3 includes the sections that each student scored the highest and lowest on. The students did very differently on the Pre-Test and Post-Test. Each student was influenced by his/her previous education, amount of education in geographical concepts, and familiarity with interpreting maps and visual representations. Nevertheless, I obtained some general ideas about their skills from the Pre-Tests and I used these results when compiling and preparing my curriculum unit.

The average percentage correct on the Pre-Test was 59.2%, counting all eighteen students' scores. The highest scores on the Pre-Test were on the Letter. The lowest scores on the Pre-Test were on Map 3, a map of a curvy bus system in a fake city. I took into account my students' apparent ability to read narratives better than bus route maps in planning my unit. Therefore, I spent more time teaching how to read fake and authentic maps than I did on how to read narratives involving directions because the students as a whole seemed to already be able to decipher narratives much better than maps.

At the end of the five-week unit, I gave the students the same test as the unit Post-Test. Overall, the students' map-reading skills improved. The average percentage correct on the Post-Test was 76%, counting all of the students' scores. The highest scores on the Post-Test were on Map 2, which was a map of a fake city. The second-highest scores were on the Bus Schedule Map, which was a map of a fake city with a separate bus schedule and questions that referred to the bus stops around the city. The lowest scores on

the Post-Test were on Map 1, a map of a fake city with questions about places and

directions.

Table 4.3

Highest and Lowest Scores on Sections of Pre-Test and Post-Test

Student	Highest Scores on Section(s) of Pre-Test	Lowest Scores on Section(s) of Pre-Test	Highest Scores on Section(s) of Post-Test	Lowest Scores on Section(s) of Post-Test
1	N/A	N/A	Map 1	Letter, Phone Directory
2	Map 1	Phone Directory	Map 3, Map 2	Map 1, Phone Directory
3	Bus Schedule, Letter, Phone Directory	Map 2	N/A	N/A
4	Map 1	Map 3, Letter, Phone Directory	Bus Schedule, Letter	Map 3, Phone Directory
5	Letter	Bus Schedule	N/A	N/A
6	Bus Schedule, Letter, Phone Directory	Map 3	N/A	N/A
7	Map 1	Map 3, Letter, Phone Directory	Map 3, Phone Directory	Map 1
8	Letter, Phone Directory	Map 3	N/A	N/A
9	N/A	N/A	Map 2, Map 3	Map 1, Bus Schedule
10	Map 2	Map 3, Letter, Phone Directory	Phone Directory	Map 3
11	Map 1	Phone Directory	Letter	Map 1
12	Letter	Bus Schedule	Map 3	Map 1
13	Letter	Map 1, Map 3	Letter	Map 2, Phone Directory
14	N/A	N/A	Map 1, Map 2, Letter	Bus Schedule
15	Map 2	Letter, Phone Directory	Map 1, Map 2, Map 3, Bus Schedule	Phone Directory
16	N/A	N/A	Map 2, Map 3, Bus Schedule	Letter
17	N/A	N/A	Map 2, Map 3, Bus Schedule, Letter	Phone Directory
18	Map 2, Map 3, Bus Schedule, Phone Directory	Map 1	Map 3, Letter, Phone Directory	Bus Schedule
19	Map 2, Map 3, Bus Schedule, Phone Directory	Map 1, Phone Directory	Map 1, Map 3, Bus Schedule, Letter, Phone Directory	Map 2
20	Letter, Phone Directory	Bus Schedule	Map 2, Map 3, Bus Schedule, Phone Directory	Map 1
21	Letter	Bus Schedule	Map 3, Letter	Bus Schedule

| 22 | Bus Schedule | Map 1 | Map 2, Bus Schedule, Letter, Phone Directory | Map 3 |
| 23 | Phone Directory | Map 3 | Letter | Map 1 |

Pre-Unit/Post-Unit Questionnaire Results

At the beginning of the unit and before the Pre-Test, I gave the students a Pre-Unit Questionnaire to determine their previous education, their knowledge about map-reading, and their opinions about how well they thought they could read maps (Appendix D). This questionnaire influenced my teaching plans. When I looked at the results of the questionnaire, I determined where my students' weaknesses lay and how best to address those weaknesses regarding map-reading. I tallied the average number on the Likert scale portion of the questionnaire and found #6 ("In my native country, I read maps to find new places") had the lowest score. This means that my students did not read maps very often in their native countries to find new places. I found #12 ("I know what the names of directions mean [north, south, east, and west]") to have the highest scores. This means the students thought they knew what the names of directions meant, but their knowledge of reading maps, bus schedules, and how to find their way around the Twin Cities was limited.

When we finished the unit, I gave the students a Post-Unit Questionnaire to ascertain how they felt about their map-reading skills now (Appendix D). On this questionnaire, #7 ("In my native country, I ask people to help me find new places") had the lowest score. The results for the highest score were the same, however, on the Post-Unit Questionnaire as on the Pre-Unit Questionnaire. The highest score was #12 again ("I know what the names of directions mean [north, south, east, west]"). I tallied the

percentage of gain or loss for each question and compared the Pre-Unit Questionnaire to the Post-Unit Questionnaire. The biggest change was on #7, in which students who answered the Pre-Unit Questionnaire had indicated that they ask people to help them find new places (versus reading maps to find new places). Students who answered the Post-Unit Questionnaire indicated that they do not ask people as much to help them find new places. This may seem surprising, but the students who took the Post-Unit Questionnaire were not all the same students who took the Pre-Unit Questionnaire. Several students who took the Post-Unit Questionnaire and Post-Test felt much more confident about finding new places, with or without maps, to begin with.

The final section of the Post-Unit Questionnaire posed a problem, the results of which are documented in Appendix D. I had hoped to capture my students' impressions of the unit by asking them to rank, in order of 1 to 5, which activities they thought helped them learn the most and the least about reading maps and finding their way around the Twin Cities. The students ranked the activities, but on a scale of 1 to 5, not in order of 1 to 5. They were all finishing their Post-Tests individually and then completing the Post-Unit Questionnaire individually, so it was not appropriate for me to interrupt the entire class and explain how to rank items from 1 to 5. I struggled with how to collect this data when the students didn't know how to follow the directions for completing the data. I finally let the students rank each item on a scale of 1 to 5 (instead of ranking the items from 1 to 5) and I tallied those results.

The third item on the Post-Unit Questionnaire ("talking about directions with classmates") ranked the highest as being most helpful. The first item ("reading real maps

of the Twin Cities and Minnesota") ranked the lowest. The other three items ranked exactly the same. The first item ("reading real maps of the Twin Cities and Minnesota") ranked the lowest. The students studied several real maps and copies of real maps of Apple Valley, St. Paul, Minneapolis, and Minnesota, and the maps were sometimes difficult to see and interpret. The students did, in fact, understand the relevance of reading real maps versus fake maps in the classroom. They learned how to find their own streets, tell people how to get to and from their house to school, find specific places in Apple Valley and Rosemount, and describe in oral and written form how to get from place to place in Apple Valley, St. Paul, or Minneapolis. Because the students did not understand how to rank the activities in order on this section, it appears that they claimed using the authentic maps was not helpful to them when, as a teacher and an observer, I am confident that it was very helpful to them. The usefulness of reading authentic maps in their lives outside of the classroom is something that a researcher cannot scientifically measure within the span of this five-week, classroom-based study.

CASAS Reading Test Results

Another data set I collected was the students' CASAS reading scores. The CASAS reading scores of the twenty-three students who participated in the study are shown in Table 4.4. The students' average score increased .5 points from Date 1 in December to Date 2 in February, only one week after the start of the unit. The students' average score increased .3 points from Date 2 in February to Date 3 in April. From Date 1 in December to Date 3 in April, the average scores went up .8 points. This increase was influenced by the students' daily map-reading practice before, during, and after the unit;

their attendance; and their familiarity with taking the CASAS reading test prior to this study.

Regarding the CASAS test's format, for this study the students were instructed on how to check each answer for correctness, eliminate incorrect answers, and choose only one answer out of the four presented. To allow the students more practice answering multiple-choice questions than they normally would have, the students periodically took multiple-choice quizzes on map-related content. This extra practice with multiple-choice questions failed to show significant improvement in the students' overall CASAS reading test scores.

This study attempted to measure the students' ability to decipher and correctly answer the map questions on the CASAS reading test. Upon initial review of the students' CASAS reading tests, I determined that the students could benefit from intense, thorough instruction on map-reading. The changes in the students' correct answers on the map questions is shown in Table 4.4. On CASAS reading test in December (Date 1), the average correct on those tests that include map questions was .016 out of 2 questions. On the CASAS reading test in February (Date 2), the average correct was .278 out of 2, which showed an increase of correct answers by .028 out of 2. The average correct on the map-reading questions on the CASAS reading test in April (Date 3) was .25 out of 2. Overall, the students showed an average increase of .234 out of 2 from Date 1 in December to Date 3 in April.

The students' CASAS reading test scores showed minimal improvement regarding their overall reading abilities and their map-reading skills as shown on the map

questions (Table 4.4). Factors of the bimonthly spacing of the test, irregular attendance, and lack of using their map-reading skills after the end of the unit and immediately prior to taking the CASAS reading test again on Date 3 may have contributed to this minimal amount of improvement. Additionally, several students who took a higher level CASAS reading test did not have map questions on their test, indicated by N/A. It was therefore not possible to measure these students' map-reading abilities on the CASAS reading test.

Table 4.4

CASAS Reading Test Scores

Student	Date 1	Score	Correct Answers on Map Q's	Date 2	Score	Correct Answers on Map Q's	Date 3	Score	Correct Answers on Map Q's
1	12/4/07	208	1/2	2/5/08	209	0/2	4/9/08	208	0/2
2	12/4/07	203	0/2	2/5/08	199	0/2	4/14/08	206	1/2
3	12/4/07	210	0/2	2/12/08	216	2/2	N/A	N/A	N/A
4	12/4/07	204	0/2	2/5/08	199	0/2	4/9/08	199	1/2
5	1/22/08	205	0/2	2/5/08	212	0/2	N/A	N/A	N/A
6	1/22/08	210	0/2	2/5/08	209	0/2	N/A	N/A	N/A
7	12/4/07	202	0/2	2/5/08	200	0/2	4/9/08	212	0/2
8	12/10/07	214	None	2/6/08	213	1/2	N/A	N/A	N/A
9				2/5/08	208	None	N/A	N/A	N/A
10	12/4/07	209	0/2	2/5/08	216	1/2	4/9/08	220	1/2
11	12/4/07	208	None	2/5/08	215	None	N/A	N/A	N/A
12	11/20/07	208	0/2	2/5/08	210	0/2	4/9/08	213	0/2
13	12/4/07	212	1/2	2/5/08	199	0/2	4/9/08	209	0/2
14	12/4/07	209	0/2	2/5/08	208	0/2	4/9/08	206	0/2
15	1/16/08	209	1/2	2/5/08	218	1/2	4/9/08	215	2/2
16				2/5/08	208	0/2	4/9/08	202	1/2
17				2/5/08	216	None	4/9/08	209	0/2
18	12/4/07	214	None	2/5/08	200	1/2	4/9/08	212	0/2
19	1/8/08	210	1/2	2/5/08	216	1/2	4/14/08	215	None
20	1/9/08	213	1/2	2/6/08	220	2/2	4/7/08	218	1/2
21	1/8/08	213	0/2				4/9/08	209	None
22	1/10/08	214	None	2/5/08	219	None	4/9/08	225	None
23	12/4/07	214	None	2/5/08	210	1/2	4/9/08	197	0/2
		Avg: 209.5	Avg: .016/2		Avg: 210	Avg: .278/2		Avg: 210.3	Avg: .25/2

Weekly Teaching Journal Entries

As a qualitative measure of data for this study and to record aspects of the study

from a teacher researcher's point of view, I wrote weekly teaching journal entries. I

detailed the lessons I taught, the students' reactions to the lessons and activities, and the

results of student learning. Complete journal entries can be found in Appendix H of the

print version of this capstone located in the Hamline Bush Library. Table 4.5 indicates

the major elements of the student progress and learning, student problems and struggles,

my reactions to the lessons, and adjustments I made for the next week's lessons.

Table 4.5

Highlights of Weekly Teaching Journal Entries

Week 1 (1/28/08-1/30/08)

	Journal Entry	Realization
Student Progress and Learning	The students refreshed their knowledge of directions (N, S, E, W) and put that knowledge to use when reading about the streets and bus routes in the "Our Community" unit of *Stand Out: Book 2*.	The week ended with most of the students knowing the names for directions in English, the basic elements of a map, and how to read bus schedules to find their way around the area.
Student Problems and Struggles	The students got tripped up easily on some aspects of my Pre-Unit Questionnaire, including the vocabulary "find" and "new places." Students struggled on the Pre-Test because we hadn't learned a lot of the skills and information yet; they tried hard anyway.	This helped me re-learn that much of my teaching includes teaching of vocabulary and test-taking skills that I didn't plan on having to teach in addition to map skills.
Investigator/Instructor Reaction	Issues with attendance arose early, with some students missing the first day of the unit and having to take the Questionnaire and Pre-Test on the second day, thus missing the second lesson.	Attendance and background knowledge of maps were going to play a big part in student improvement. Absent students would have trouble catching up, especially if they hadn't studied map-reading before.

Adjustments for Next Week	I was pleasantly surprised that many of my students had a lot of previous experience using maps in their native countries.	The students with knowledge and experience using maps could help others who had little experience with maps or were confused by finding their way around on maps.

Week 2 (2/4/08-2/7/08)

	Journal Entry	Realization
Student Progress and Learning	The students progressed quite rapidly reading fake maps from *Stand Out.*	Basic elements of geography are often learned in their native languages; students just need to translate the words.
Student Problems and Struggles	Map unit was interrupted to take the CASAS reading tests. Students still having trouble visualizing themselves in the map and knowing when to turn right or left when not facing north.	CASAS tests are scheduled by the ESL teachers to be taken every two months. This was another independent variable that possibly affected my study. I would have liked to have waited to take the CASAS until the map unit was finished. I suggested turning the map around to help visualize themselves in the map. Using maps as a way of representing real streets and shops is not something that some students are used to.
Investigator/Instructor Reaction	The class became ever more divided between those who only had to learn new vocabulary in English to read maps and those who needed to learn vocabulary, geographical concepts, and visualization techniques.	I became more convinced that the students who had previous practice reading maps were going to excel at a much faster rate than those students who had no experience reading maps in their native languages.
Adjustments for Next Week	The students did well using Mapquest to find places and figure out directions around the area.	Incorporating Mapquest and GoogleMaps is a great benefit to the students. They are learning how to get around the way native English speakers do in the U.S.

Week 3 (2/11/08-2/14/08)

	Journal Entry	Realization
Student Progress and Learning	The students did a wonderful job of working with partners and speaking in English. I allowed them to speak in their native languages when I couldn't help them personally. They practiced reading letters and phone directories along with maps.	The students didn't have much trouble on the Pre-Test with narratives like a letter describing directions, so I didn't spend too much time on this. It was included in the unit, though, and was a good chance to break up the map-reading for a couple of days. Constant map-reading can get too intense, especially for those students who are having a tough time with it.
Student Problems and Struggles	The students who had had little experience reading maps and/or had been frequently absent struggled much more than those who had previous experience and/or were regular attendees.	The combination of background experience and knowledge of how to read a map in one's native language combined with regular attendance helped many students to learn much more than those who were lacking in one or both areas.
Investigator/Instructor Reaction	The variety of elements included in my lessons this week made me remember how many different things I am trying to teach them: vocabulary, basic geography, addresses, phone book information, prepositions, reading different types of maps and bus schedules, and being able to talk about places and directions with others.	A map unit ends up being quite complex because I'm not just teaching "map-reading." The students are using their map-reading skills to communicate with each other in English, which is a goal of every lesson, regardless of the subject.
Adjustments for Next Week	New students who entered at a low level of English or students who had been absent for a day or more had a difficult time catching on, as each lesson flowed from day to day.	New and absent students needed more individual attention and explanation by me and my volunteers. Teaching map-reading to small groups would be easier and would give everyone a chance to practice talking about directions a lot more.

Week 4 (2/25/08-2/28/08)

	Journal Entry	Realization
Student Progress and Learning	I put the students in groups of different native	The difference in English levels is prominent, much more so

	languages. They worked really well together, helped each other, and spoke more English than if they had chosen their own groups.	than when units are focused on literacy and not on something visual, like maps. Luckily, the students help each other when I cannot get to each group.
Student Problems and Struggles	The students are getting better at asking for and giving directions on fake maps, but their experience getting around in the immediate area is still limited. Some never leave the house when they're not in school.	It's a vicious cycle: students could get around more if they could read maps better, but they aren't getting the real-life practice of reading maps if they don't ever go anywhere.
Investigator/Instructor Reaction	I used the technique of having the students work together on worksheets in groups and I only checked one student's answers. That person had to then make sure that the group's answers were correct.	Having one in each group act as a teacher worked well and saved me the time of having to check everyone's papers individually. When the class grows to over twenty per day, working with students individually for more than a few minutes is impossible.
Adjustments for Next Week	By the end of the fourth week, the students really had a good grasp on how to read city maps and we started on highway maps.	Getting the students to translate their map-reading skills from city maps—both real and fake—to state highway maps might be a challenge. I'll teach them elements of highway maps that aren't on city maps. They will learn more about mileage than they did with city maps.

Week 5 (3/3/08-3/5/08)

	Journal Entry	Realization
Student Progress and Learning	The last week of the unit gave the students multiple opportunities to demonstrate their improved map-reading skills, especially by telling the direction of movement across a U.S. map. Those who had been present every day showed great improvement in class and on the Post-Test, and even those who had only missed a few days increased their	The issue of attendance was a recurring theme for this unit. Even though it took five weeks instead of seven, the lack of consistency with attendance was surely an issue. I was glad to see that all of the students, regardless of background knowledge, improved their skills, judging from their comments, in-class work, and Post-Tests.
The students are really getting

	map-reading skills.	good at becoming familiar with GoogleMaps to find places and visualize the world.
Student Problems and Struggles	The students' progress with map websites continues. Newer students who had not been present at the beginning of the unit and those who had missed several classes had trouble keeping up with each lesson as the unit went on, including in this final week. The lessons built on the knowledge of the days and weeks before.	Volunteers in the classroom helped those students who needed to catch up. In the end, I felt there were some students who had so little background experience with maps, they could have benefited from studying the entire unit again. Other students were definitely ready to move on.
Investigator/Instructor Reaction	I had planned the unit to go from narrow to broad—from fake city maps to real city maps to state highway maps to a U.S. map. I felt this would help the students transfer their map-reading abilities from a place they knew well (their city) to larger areas that are impossible to see all at once without visualizing them on a map.	The overall unit flowed well, from city to state to country. The students got practice talking about directions in their city and state. If they were present for all or most of the lessons, they developed a fundamental understanding of space and how places are represented on paper.
Adjustments for Next Week	The students' Post-Tests and CASAS reading tests will give me the percentage of improvement in my class.	Knowing my students improved their map-reading skills and worked well together in groups to help each other means more to me as a teacher than percentages of improvement on tests.

Discussion of Results

The purpose of this study was to teach adult ESL students how to read, interpret,

and become accustomed to reading different types of maps in the classroom so that they

could eventually read maps if they needed to or desired to outside the classroom. In order

to measure the success of this study, I used three forms of quantitative measurements (a

Pre-Test/Post-Test, Likert-scale questionnaires, and CASAS reading test scores) and one

form of qualitative measurement in the form of a weekly teaching journal. I regularly

collected student work throughout the unit, samples of which can be found in Appendix G in the print version of this capstone located in the Hamline Bush Library.

Attendance and Improvement

The largest independent variable that affected the map-reading study was attendance. My class has a total of twenty-seven students, but between fourteen and twenty-two are in attendance each day. There are only three or four students who attend regularly, all four days a week. The others come when they or their children aren't sick, when they don't have to go to work, when they don't have transportation issues, and/or when they are motivated to come. They are not required to come to school as K-12 students are. Because their attendance is sporadic, conducting a Pre-Test/Post-Test design such as mine was difficult; the students who started the unit were not necessarily the students who finished the unit. The results of the study are not as reliable as they could have been if all of the students had attended class every day. If they had, their results would demonstrate a combination of their previous education, background knowledge, and newly-acquired knowledge and skills about maps. As it is, the results of my study were greatly affected by my students' sporadic attendance, making it difficult to measure how much their skills improved from the beginning to the end of the unit.

Twenty-three students participated in all or some of the study. Of those twenty-three students, the average number of hours per week that all the students attended was 7.1 per week out of a possible 10. As indicated in Table 4.1, the average percentage of increase from the Pre-Test to the Post-Test was 16.8%.

Fourteen students completed the study, meaning they took the Pre-Test, the Post-Test, and completed the majority of the activities throughout the unit. The average number of hours per week that those fourteen attended was 7.7 per week out of a possible 10. The average percentage of increase from the Pre-Test to the Post-Test was 23.3% (Table 4.2).

Eighteen students took the Pre-Test. Their average score was 59.2%. Nineteen students took the Post-Test. Their average score was 76%. The Post-Test scores showed an average increase of 16.8%. Fourteen students took both the Pre-Test and the Post-Test. Their scores showed an average increase of 23.3%. Those students attended class regularly and completed the majority of the in-class assignments. Their scores demonstrated a higher average than the scores of the students who took either the Pre-Test, the Post-Test, or both tests. In other words, the fourteen students who completed the unit showed more improvement than those who completed only part of the unit.

Because attendance was irregular during the unit, it is difficult to correlate the number of hours that students attended to the amount of increase in their Post-Test scores. As shown in Table 4.6, those students who attended class the most often (with 50, 47.5, and 46.25 hours) showed various changes in their Post-Test scores (63%, 0%, and 20% increase, respectively). Those students with both Pre-Test and Post-Test scores who attended class the least often also demonstrated different percentages of improvement in their scores. Students who attended 27.25 hours, 26.25 hours, and 26 hours improved their scores by 10%, 3%, and 50%, respectively. Table 4.6 provides the hours of

attendance for the fourteen students who completed the study versus their percentage of improvement from the Pre-Test to the Post-Test.

Table 4.6

Improvement and Attendance of Students Completing the Pre-Test and Post-Test

Student	Attendance in Hours During Map-Reading Unit	Percentage of Increase from Pre-Test to Post-Test
7	50	63
18	47.5	0
12	46.25	20
19	45	4
10	44.25	53
4	43.75	50
22	42.25	23
23	40.75	17
2	37.25	10
20	31.25	7
11	31	16
21	27.25	10
13	26.25	3
15	26	50
	Avg: 38.5 hours total for 5 weeks Avg per week: 7.7	Avg: 23.3

Previous Education and Improvement

Besides attendance, a major influence on the development of map-reading skills may have been the students' previous native language education and English-language education. However, the impact that background knowledge and prior education had on the students' scores was difficult to measure. Tables F and G show that the fourteen students who completed the Pre-Test and the Post-Test demonstrated a 0% to 63% increase in their Post-Test scores.

When asked on the Pre-Unit Questionnaire if the students read maps in their native countries to find new places, the students indicated 'a lot,' 'sometimes,' 'rarely,'

or 'not at all.' Table 4.7 illustrates the variety of answers in this one question alone. Students from the same country and/or the same language have had different educational experiences and different levels of familiarity with using maps in their native cultures; it is no surprise that they bring with them varied abilities and levels of comfort when reading maps in English.

The students were also asked in another question how people find new places in their native countries. In their own words, the students primarily answered, "Ask for directions" and "Ask a friend." Only three students out of the fourteen answered "Look at a map." I had predicted that the majority of my students did not use maps in their native countries but rather relied on friends, family members, or friendly strangers who spoke their language to help them when they needed to find new places. This prediction was confirmed by their hand-written and Likert-scale answers on the Pre-Unit and Post-Unit Questionnaires.

The students' Pre-Unit and Post-Unit Questionnaire answers about their perceived map-reading skills were fairly predictable. The students generally knew what the names for directions meant (north, south, east, west) at the beginning of the unit, and they also knew them at the end of the unit. The largest problem for the students was orienting themselves on a map to go from one place to the next. The more we practiced using directions in class, the better they got at navigating around maps according to the directions. By the end of the unit, the students could call out the direction we were going from one place to another on a U.S. map, which most of them wouldn't have been able to do at the beginning of the unit.

As I had suspected, the students admitted on the questionnaires that they didn't often use maps in their native countries. They asked people in their native languages or had friends and family members help them to find new places. In the U.S., they can now use city maps and bus maps if they need to or want to. They can also use their improved English language skills to ask for or give people directions.

In an attempt to discover how much their previous education and background knowledge about geography may have affected their development of map-reading skills, I attempted to correlate their years of native language and English-language education with the changes in their Post-Test scores. The fourteen students who completed the unit had between about six years and twenty-one years of education. Their Post-Test scores showed increases of 0% to 63% over their Pre-Test scores. As Table 4.7 indicates, the students claimed that they 'sometimes,' 'rarely,' or 'not at all' read maps in their native cultures. With such a wide variety of educational levels and prior familiarity with maps, it was impossible to determine with certainty what impact my map-reading unit had on the students' already-present map-reading abilities and frequency of map use.

Several students who had little practice reading maps mentioned to me that they were beginning to understand how to read maps now and they were getting comfortable with figuring out which direction they should go (north, south, east, or west) to reach their destination. Other students (those with twelve to twenty-one years of education) completed the activities with few problems and helped their neighbors who were struggling. I had students who had very little background education in their native language and had not used maps before who needed one-on-one tutoring to grasp the

concepts. I also had students who had studied map-reading and geography in their native countries. These students may have transferred their map-reading skills while acquiring new English vocabulary. While many of the students' Post-Tests showed positive results (only one student's score didn't change), they all learned different elements and skills, depending on their levels of knowledge and abilities at the beginning of the unit.

Table 4.7

Improvement and Previous Frequency of Map Use by Students Completing the Pre-Test and Post-Test

Student	Native Country and Language	Total Previous Education	Frequency of Map Use in Native Culture	Percentage of Increase from Pre-Test to Post-Test
19	Vietnam; Vietnamese	16 years and 5 months	Sometimes	4
20	Thailand; Thai	16 years and 2 months	Sometimes	7
11	China; Chinese	13 years	Sometimes	16
22	Thailand; Thai	21 years	Rarely	23
18	Vietnam;Vietnamese	16 years and 3 months	Rarely	0
23	Vietnam; Vietnamese	12 years and 6 months	Rarely	17
13	Ecuador; Spanish	8 years	Rarely	3
4	Ecuador; Spanish	7 years	Rarely	50
21	Somalia; Somali	7 years	Rarely	10
12	Liberia; Standard Liberian English	10 years and 4 months	Not at all	20
2	Somalia; Somali	10 years	Not at all	10
10	Mexico; Spanish	7 years	Not at all	53
7	Mexico; Spanish	6 years and 7 months	Not at all	63
15	Mexico; Spanish	6 years and 3 months	Not at all	50
		Avg: 11 years and 4 months		Avg: 23.3

Conclusion

In order to study the improvement of my adult ESL intermediate level students' map-reading skills, I implemented three types of quantitative data collection (a Pre-

Test/Post-Test, Pre-Unit and Post-Unit Questionnaires, and CASAS reading test scores) and one type of qualitative data collection in the form of weekly teaching journal entries. I used Chapter 5 ("Our Community") of *Stand Out: Book 2* as the curriculum basis for the unit. I gathered numerous worksheets, fake maps, and authentic maps of the local area for the students to decipher. The class average on the Post-Test increased by 16.8% over the Pre-Test. Of the fourteen students who took both the Pre-Test and the Post-Test, the average increased by 23.3%. These results demonstrate that the students who participated in most or all of the five-week unit were able to demonstrate a larger increase in map-reading ability than the students who took the Pre-Test or the Post-Test (not both) and participated in only some or few of the unit activities.

The students' CASAS reading tests showed minimal improvement over the six months of taking bi-monthly tests. The scores of the students who participated in this study showed improvement by an average of .8 points from their first test to their third test. Their correct answers on the map questions increased by only .234 out of 2. The students might benefit from a refresher of map terms and map-reading skills prior to each bi-monthly test in order to correctly answer the map questions on the CASAS reading test.

Despite the low level of improvement on the students' CASAS reading test scores, the students' daily assignments, group work, Post-Tests, and Post-Unit Questionnaires all indicated that the students' knowledge of basic elements of geography and ability to read and understand maps of their present city and state increased. Most of the students indicated on the Post-Unit Questionnaires that they would consult a map in

the future if they needed to. They also indicated that they now felt they could give

directions to people or ask for directions if they are lost. The results of the study were

ultimately positive, despite the challenges of enormous differences in students' daily

attendance, background knowledge, previous native language education, years spent in

the U.S., and English language abilities.

In this chapter, I presented and analyzed the results of my data collection

methods. In Chapter Five, the Conclusion chapter, I will discuss my major findings and

their implications. I will also reflect on the findings of this study and make

recommendations for future action research studies of this nature in the adult ESL

classroom.

CHAPTER FIVE: CONCLUSION

Introduction

In this research study, I attempted to answer the following research question: How

much can students' map-reading skills improve from participating in a five-week map-

reading unit? I hoped to help my adult ESL students improve their ability to decipher

maps, discuss directions with others in English, and feel more confident in finding their

way around more independently. In this chapter, I will introduce the research study topic

and explain my rationale for choosing to conduct this research study; clarify how I

prepared and conducted the study; present my major findings of the study; explain the

limitations of the study; discuss the implications of the study for other teachers of adult

ESL students in Adult Basic Education programs; and offer suggestions for further

research on map-reading skills in the adult ESL classroom.

Basis for the Research Study

Imagine being new to a country. So many things are different: the customs, the

language, the laws, the food, the clothes, the body language, and the bureaucracy. Even if

you studied the language and culture in your native country, to be inundated with English

and American customs every day when you're not used to it can be infinitely stressful.

Now you have to find your way around. You have to find your way to the bank, to stores,

to the post office, to a government office to fill out forms that you don't understand, to an

adult school to learn English, and to job interviews. Even if you have a relative or friend to aid you, your lack of English and knowledge of how to get from place to place is enough to make you want to spend the rest of your days in the privacy of your home.

If you don't know English very well, how can you get around in the U.S.? You can get around by reading maps. This will help you to get to your destination initially, which may encourage you to continue getting out in the community and practicing your English. If you know some English but don't know how to read maps, how can you get around? You can first ask for directions in English and then learn how to read maps to reach places that are more complicated to reach than simply by following oral directions.

The above are the two main scenarios I encounter in my teaching of low-intermediate to high-intermediate adult ESL students in the U.S. My students tend to fall into one of two categories: students with low oral skills and high-intermediate reading skills and students with high-intermediate oral skills and low reading skills. Learning to read maps can help both groups of adult students become more confident and independent—and, in turn, improve their reading, writing, listening, and speaking skills in English.

Preparing for the Research Study

For this research project, I first examined a variety of adult ESL textbooks and workbooks for examples of maps. I recalled conversations I had with other ESL teachers concerning their students' lack of map-reading skills. I studied the CASAS reading test for adult ESL students. I found that on the CASAS reading test that most adult students take, they were asked to interpret basic street maps, which ultimately determined their

initial placement and level gains in their ESL classes. I determined that the ability to read and interpret state and city maps, addresses, directions, bus maps, subway maps, and building directories are all considered by textbook makers, ESL teachers, and CASAS test writers to be a useful—if not vital—skill for people living in the U.S.

I conducted research on Adult Basic Education programs and their instructional goals. I found that they tend to focus on communicative competence. They also utilize standardized tests, such as the CASAS reading test, for placement and advancement in their ESL programs. For students coming from cultures who are not used to taking multiple-choice standardized tests, the CASAS reading test can be a challenge. The test might be testing their test-taking skills rather than their reading skills.

I took into account my low-intermediate to high-intermediate ESL students' needs: as adults, they are busy, active people, with outside responsibilities. They desire to attain communicative competence rather than focus on academic goals at this point. They come from a variety of cultures with different language and educational backgrounds. Their reading skills and spatial intelligence vary widely. They come to the classroom with different skills regarding map-reading and identifying key elements of maps. They generally want and need to improve their ability to find new places and talk about directions with people in their community.

<center>Conducting the Research Study</center>

Keeping all of the above in mind, I based my map-reading unit on the needs and interests of my students. I kept my unit competency-based with the focus on communicative activities. I incorporated several authentic maps that the students could

use immediately outside of the classroom. I also devised several multiple-choice quizzes for my students to do throughout the unit in order to give them practice for the CASAS reading test that they take every two months. The students practiced asking for and giving directions orally and in written form. They discussed places they went in their free time. They used Internet websites such as Mapquest and GoogleMaps to read maps and directions. They learned how to visualize themselves in a map, go straight, turn right and left, and orient themselves according to the direction they want to go. I prepared them in the classroom to read maps outside the classroom.

Major Findings

Major findings from this study are that the benefits of map-reading to adult ESL students are not easily measured in a classroom setting. The challenges of the students' irregular attendance, background knowledge, previous education in their native countries and in the U.S., and English language skills all greatly affected the results of this study. In a classroom of low-intermediate to high-intermediate adult ESL students from a wide variety of cultures and educational backgrounds, I attempted to devise a unit of map-reading that would benefit them all while living in the U.S. Although their background education played a major role in their acquisition of map-reading skills and concepts, the independent variable of irregular attendance created a major obstacle in establishing scientifically reliable results. Despite these influences on a study of this nature, I found that the students' map-reading skills improved from the Pre-Test to the Post-Test by an average of 16.8% by those who participated in some of the lessons and by 23.3% by those who participated in all or most of the lessons. The students' CASAS reading scores

showed only minimal improvement (.8 points) over a period of six months and three regularly-scheduled CASAS reading tests. The students' retention of the knowledge, vocabulary, and skills required to decipher the maps on the CASAS reading tests was limited. The students' average scores on the CASAS map questions improved by only .234 out of 2 questions. Due to the students' inability to correctly answer the questions on the CASAS reading test, I recommend more instruction on map-reading throughout the year, perhaps on a weekly or bi-weekly basis. Teachers could also review map-reading skills (as well as graph- and chart-reading skills) on the days prior to taking regularly-scheduled CASAS reading tests. However, these techniques will only benefit the students who are present and actively participating on those days.

Limitations

Limitations of the research study included, as mentioned previously, sporadic attendance on the part of the participants, open enrollment (students entering and exiting throughout the five-week period of the study), English-language skills, and great differences in students' background knowledge and experience with using maps. All of these independent variables were out of the control of the researcher. I cite them as limitations because these same factors will most likely affect any study conducted on adult ESL students and these factors should be considered when planning such a study.

I conducted the study on as many students as I could, knowing that more student participants would mean a more reliable study. It would have been impossible to give every new or returning student a Pre-Test to measure their progress along with the other students, as they had not been present for the duration of the unit. To that end, I recorded

the progress of the students who were present during all, most, or some of the unit. I was

unable to measure the progress of other students who entered the class in the middle of

the unit and participated in only a few lessons.

The students' native language education and English-language education in the

U.S. differed widely. It is likely that a correlation exists between a greater amount of

native language education and a higher Pre-Test score, but this was not proven. In Table

4.1, I provide the amount of native language education and English-language education in

the U.S. for the reader's information only. Clearly, an intermediate level ESL class of

adults in an ABE program will include students from all types of educational

backgrounds. Those backgrounds affect their knowledge base, familiarity with maps, and

spatial abilities when learning how to read maps that are common in the U.S.

Implications

I knew that conducting an action research project in an adult ESL class would

have its challenges as well as its rewards. I didn't realize that the biggest challenge would

be the irregular attendance and open enrollment. I found that five weeks was too long for

an action research project of this nature, simply due to the different students who entered

and exited my class during that time and the irregular attendance of the students who

remained enrolled in my class. If I were to conduct an action research project again in an

adult ESL classroom, I would shorten the length of the project, keeping attendance issues

in mind. I also would narrow the scope of the project, focusing on one type of map such

as a bus map and schedule, in order to more easily measure the progress and

improvement of individual students.

Further Research

Further study would be required to determine exactly how much each student's knowledge and ability could increase after one unit primarily focused on map-reading. Such a study would be more possible and feasible to do if it were reduced to a case study of two students from different language and educational backgrounds. If I were to conduct a case study, I would first determine which geographical concepts the students had learned in his/her native language. I would then gear my unit toward the teaching of the concepts that the students didn't already know. As a researcher, I would be careful to not allow my test results to represent each student's population as a whole, inviting stereotypes of a culture or country.

Another data set I would collect in the future would be the students' CASAS listening test scores. The CASAS listening test requires students to listen to directions and find the answers to multiple-choice questions about fake maps in the listening test booklets. This data could be added to the data derived from the students' CASAS reading test scores to provide another view of the students' language development regarding maps.

I hope that other teachers of adult ESL students will consider incorporating more map-reading (when possible and available) into their lessons, from the beginner to the advanced level. The curriculum I developed is available for teacher use in the print version of this capstone located in Bush Library at Hamline University.

In conducting this study, I learned that each student comes to the classroom with a wide variety of map-reading abilities, and the benefits of teaching students basic map-

reading skills are intangible. Teachers of adult ESL students need to prepare their students to be independent citizens who can take part in their communities. When adult students can ask for and give directions to people, they can use their English more, which will in turn develop their English. As they practice reading city, bus, and state highway maps, they will become more familiar with an aspect of American culture that they can participate in: reading symbols, graphs, and charts.

My study was an intense, five-week unit that helped my students learn to interpret many different types of maps. In the future, I plan to incorporate maps, charts, and graphs into my teaching more often throughout the year so my students become more familiar with reading these types of texts that are ubiquitous in the U.S. The results of teaching map-reading are difficult to measure and may not be immediately apparent. I am convinced, however, that if more teachers of adult ESL students teach more map-reading in their classes, the outcomes can only help our students to become more independent and unafraid to explore their adopted communities, states, and country.

Conclusion

In the present study, I took into account the general impressions of all of my students' map-reading knowledge and focused my unit on teaching the vocabulary, visualization techniques, directional phrases, and elements of maps to all of my students. I had hoped that all of the students would benefit in many ways from the unit, with each developing their reading skills and their confidence in using English outside of class. In that respect, I think I was successful. Such success may not be easily and scientifically measurable in a quantitative way, but it is measurable in the positive comments and class

atmosphere that were a result of the unit. The students enjoyed learning the new concepts

and the ones who were so-called 'map experts' took pleasure in helping their classmates.

I used the unit to incorporate the students' daily lives into the lessons, such as when they

had to tell classmates where they went over the weekend or how to get from school to

their house. The students could see the immediate relevance to what we were learning,

and that helped them to continue on with the unit and learn more about maps and

geography than in the average adult ESL classroom.

All of the students learned from the unit, even if they all learned different things.

All of them learned how to explain how to get to different places in their communities,

how to orient themselves when looking at a map and decipher which direction they

should go when following directions, and how to use Internet websites to find places

around the Twin Cities. I observed and interacted with the students as they completed

these tasks on a daily basis. They learned to talk about directions with people from other

language and educational backgrounds. They learned to feel more comfortable and less

intimidated when faced with having to read a map in an ESL textbook or a map of their

own community. They learned how to read a highway map's symbols, scale, and mileage

chart, which will help them if they travel out of town. They learned to read all four

questions in a multiple-choice quiz to determine the best answer.

Overall, the students who attended class for most of the unit learned a great deal.

Those who attended less regularly didn't learn as much as those who attended class every

day, but even the students who couldn't attend as much or those who didn't bring with

them as much background knowledge learned many new concepts and map-reading

skills. There is no way to measure which concepts and skills each student will use in the future. I only know I gave all my students a starting point. They are now able to head out on their own, with phrases, symbols, street grids, and compasses in their heads to help them as they go off on their own, in whatever directions they choose.

APPENDIX A

Student Consent Form

January 28, 2008
Dear Student,

As a graduate student earning my Master of ESL at Hamline University, I will be undertaking a study of my ESL students' reading skills in the spring of 2008. The results of my research will be compiled and printed in a bound thesis and kept in Hamline's Bush Library for other teachers to read. The results may be published in other ways as well, such as in an educational journal.

You are invited to participate in a study of reading maps in the adult English as a Second Language classroom. I hope to learn that additional practice with reading various types of maps and asking for and giving directions will help you to develop your map-reading skills and increase your CASAS reading test scores. I also hope that you will be able to read maps and give directions in your daily lives.

You were selected as a possible participant in this study because you are a student in my morning low-intermediate ESL class. The population of the study will include approximately 30 adult students. You will be asked to take the CASAS reading test as regularly scheduled, take a unit pre-test, complete class assignments and questionnaires, and take a unit post-test. The study will entail participation and completion of work during morning class sessions for approximately six weeks in January, February, and March of 2008.

The benefits to you are an increased ability to read various types of maps, read charts, ask for and give directions, and use language associated with travel. You may see an increase in your knowledge and ability as shown by your unit test scores and by your CASAS test scores. You may also notice an increase in your ability to read maps and give directions in real life situations.

Any information obtained in this study will remain confidential. If any students are identified individually, their names will be replaced with pseudonyms. The results and any samples of student tests, worksheets, and questionnaires will be reported anonymously in the final research project. Participation in this study is voluntary. Your decision to participate in the study or not will not affect your future relations with me, Grace ABE School, ISD 196, or Hamline University. You may withdraw from the study at any time without penalty.

Consent to conduct this research has been obtained from Cathy Koering and Ram Singh of District 196 and from the Hamline University Graduate School of Education. If you have any questions about this research, please contact me at 651-683-6969 extension 95471 or 651-353-1127 or at lisa.mccallum@district196.org. You may also contact Ann Mabbott at Hamline University at 651-523-2446 or at amabbott@hamline.edu. Please return the consent form to me by February 5, 2008. Thank you very much for your cooperation.

Sincerely,
Lisa McCallum
Grace ABE School
7800 150th Str. W
Apple Valley, MN 55124

Consent Form for Adult Students/Students over 18

The purpose of this form is to confirm that I have read and understood this request to participate in a map-reading study in ESL class at Grace Adult Basic Education School. I have voluntarily decided to participate in the study, and I allow my work samples and test scores to be included in the researcher's results.

Printed Name _____

Signature _____

Date _____

Appendix B

NRS Functioning Level Table

Appendix C

CASAS Skill Level Descriptors for ESL

Appendix D

Pre-Unit Questionnaire and Tally

Post-Unit Questionnaire and Tally

Pre-Unit Questionnaire for Map-Reading Unit
Grace ABE School, District 196
Spring 2008

1. What is your native country?

2. What is your native language?

3. How many years did you go to school in your native country?

4. How many years have you gone to school in the U.S.?

5. In your native country, how do people find new places?

Please answer the questions by circling your answer.
   1=none/not at all
   2=rarely/not very often
   3=sometimes/often
   4=very often/a lot/no problem

6. In my native country, I read maps to find new places.
   1   2   3   4

7. In my native country, I ask people to help me find new places.
   1   2   3   4

8. In my native country, I learned how to read maps in school.
   1   2   3   4

9. I know how to ask for directions from people in English if I need to.
   1   2   3   4

10. I know how to give directions to people in English if they ask me.
   1   2   3   4

11. I can understand the maps on the CASAS test.
   1   2   3   4

12. I know what the names of directions mean (north, south, east, and west).
    1   2   3   4

13. I can show people where my country is on a world map.
    1   2   3   4

14. I can find my city on a Minnesota state map.
    1   2   3   4

15. I know how to go from my house to Rochester, Duluth, or Wisconsin.
    1   2   3   4

16. I can read city maps of Apple Valley, Rosemount, St. Paul, and Minneapolis.
    1   2   3   4

17. I can read bus schedules and maps of the bus routes.
    1   2   3   4

18. I know how to go from my house to St. Paul or Minneapolis.
    1   2   3   4

Pre-Unit Questionnaire for Map-Reading Unit: Tally

1. What is your native country?
2. What is your native language?
3. How many years did you go to school in your native country?
4. How many years have you gone to school in the U.S.?
5. In your native country, how do people find new places?

Please answer the questions by circling your answer.
    1=none/not at all
    2=rarely/not very often
    3=sometimes/often
    4=very often/a lot/no problem

6. In my native country, I read maps to find new places.

	1	2	3	4
Total	9	6	5	1

average 40/21=1.9=lowest

7. In my native country, I ask people to help me find new places.

	1	2	3	4
Total	2	0	16	3

average 62/21=2.95

8. In my native country, I learned how to read maps in school.

	1	2	3	4
Total	0	8	9	4

average 59/21=2.81

9. I know how to ask for directions from people in English if I need to.

	1	2	3	4
Total	5	9	5	2

average 46/21=2.19

10. I know how to give directions to people in English if they ask me.

	1	2	3	4
Total	7	4	8	2

average 47/21=2.24

11. I can understand the maps on the CASAS test.

	1	2	3	4
Total	1	5	11	4

average 60/21=2.86

12. I know what the names of directions mean (north, south, east, and west).

	1	2	3	4
Total	1	1	7	12

average 72/21=3.43=highest

13. I can show people where my country is on a world map.

	1	2	3	4

Total   4   1   4   12
average 66/21=3.14

14. I can find my city on a Minnesota state map.

	1	2	3	4
Total	2	1	9	9

average 67/21=3.19

15. I know how to go from my house to Rochester, Duluth, or Wisconsin.

	1	2	3	4
Total	5	2	10	4

average 55/21=2.62

16. I can read city maps of Apple Valley, Rosemount, St. Paul, and Minneapolis.

	1	2	3	4
Total	2	6	6	7

average 60/21=2.86

17. I can read bus schedules and maps of the bus routes.

	1	2	3	4
Total	3	5	6	7

average 59/21=2.81

18. I know how to go from my house to St. Paul or Minneapolis.

	1	2	3	4
Total	4	2	7	8

average 65/21=3.10

Post-Unit Questionnaire for Map-Reading Unit
Grace ABE School, District 196
Spring 2008

1. What is your native country?

2. What is your native language?

3. How many years did you go to school in your native country?

4. How many years have you gone to school in the U.S.?

Please answer the questions by circling your answer.
   1=none/not at all
   2=rarely/not very often
   3=sometimes/often
   4=very often/a lot/no problem

6. In my native country, I read maps to find new places.
     1 2 3 4

7. In my native country, I ask people to help me find new places.
     1 2 3 4

8. In my native country, I learned how to read maps in school.
     1 2 3 4

9. I know how to ask for directions from people in English if I need to.
     1 2 3 4

10. I know how to give directions to people in English if they ask me.
     1 2 3 4

11. I can understand the maps on the CASAS test.
     1 2 3 4

12. I know what the names of directions mean (north, south, east, and west).
     1 2 3 4

13. I can show people where my country is on a world map.
       1   2   3   4

14. I can find my city on a Minnesota state map.
       1   2   3   4

15. I know how to go from my house to Rochester, Duluth, or Wisconsin.
       1   2   3   4

16. I can read city maps of Apple Valley, Rosemount, St. Paul, and Minneapolis.
       1   2   3   4

17. I can read bus schedules and maps of the bus routes.
       1   2   3   4

18. I know how to go from my house to St. Paul or Minneapolis.
       1   2   3   4

19. I feel comfortable and confident about finding my way to new places in the Twin Cities.
       1   2   3   4

20. I think I will read maps in the future if I am lost.
       1   2   3   4

21. Which activities in this unit helped you learn the most about reading maps?
Put in order of 1 to 5.
Most=1   2   3   4   Least=5

_____ reading real maps of the Twin Cities and Minnesota

_____ reading fake maps from worksheets

_____ talking about directions with classmates

_____ answering questions on worksheets and quizzes

_____ finding places and directions on the internet

Post-Unit Questionnaire for Map-Reading Unit: Tally

1. What is your native country?
2. What is your native language?
3. How many years did you go to school in your native country?
4. How many years have you gone to school in the U.S.?

Please answer the questions by circling your answer.
        1=none/not at all
        2=rarely/not very often
        3=sometimes/often
        4=very often/a lot/no problem

6. In my native country, I read maps to find new places.

	1	2	3	4
Total	8	4	5	2

average 39/19=2.05
up .15%

7. In my native country, I ask people to help me find new places.

	1	2	3	4
Total	2	7	6	1

average 38/19=2=lowest
down .95%

8. In my native country, I learned how to read maps in school.

	1	2	3	4
Total	5	7	6	1

average 41/19=2.16
down .65%

9. I know how to ask for directions from people in English if I need to.

	1	2	3	4
Total	0	10	5	4

average 51/19=2.68
up .49%

10. I know how to give directions to people in English if they ask me.

	1	2	3	4
Total	0	9	5	5

average 53/19=2.79
up .55%

11. I can understand the maps on the CASAS test.

	1	2	3	4
Total	2	5	9	3

average 51/19=2.68
down .18%

12. I know what the names of directions mean (north, south, east, and west).

	1	2	3	4
Total	0	0	5	14

average 71/19=3.74=highest
up .31%

13. I can show people where my country is on a world map.

	1	2	3	4
Total	0	4	7	8

average 61/19=3.21
up .07%

14. I can find my city on a Minnesota state map.

	1	2	3	4
Total	2	4	4	9

average 58/19=3.05
down .14%

15. I know how to go from my house to Rochester, Duluth, or Wisconsin.

	1	2	3	4
Total	5	4	5	5

average 48/19=2.53
down .09%

16. I can read city maps of Apple Valley, Rosemount, St. Paul, and Minneapolis.

	1	2	3	4
Total	0	1	10	8

average 64/19=3.37
up .51%

17. I can read bus schedules and maps of the bus routes.

	1	2	3	4
Total	4	5	6	4

average 48/19=2.53
down .28%

18. I know how to go from my house to St. Paul or Minneapolis.

	1	2	3	4
Total	1	3	6	9

average 61/19=3.21
up .11%

19. I feel comfortable and confident about finding my way to new places in the Twin Cities.

	1	2	3	4
Total	4	6	6	3

average 46/19=2.42
not on Pre-Unit Questionnaire

20. I think I will read maps in the future if I am lost.

	1	2	3	4
Total	0	4	7	8

average 61/19=3.21

not on Pre-Unit Questionnaire

21. Which activities in this unit helped you learn the most about reading maps?
Put in order of 1 to 5.

Most=1   2   3   4   Least=5

_____ reading real maps of the Twin Cities and Minnesota
average 2.67
_____ reading fake maps from worksheets
average 2.88
_____ talking about directions with classmates
average 2.89
_____ answering questions on worksheets and quizzes
average 2.88
_____ finding places and directions on the internet
average 2.88

Appendix E

Pre-Test/Post-Test for Map-Reading Unit and Answer Key

Appendix F

Curriculum: Samples of Maps and Worksheets Used in the Study

(available in the print version of this capstone located in the Hamline Bush Library)

Appendix G

Samples of Student Work

(available in the print version of this capstone located in the Hamline Bush Library)

Appendix H

Weekly Teaching Journal Entries

(available in the print version of this capstone located in the Hamline Bush Library)

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