BASIC SKILLS MATHEMATICS: THE PERSPECTIVES OF COMMUNITY COLLEGE MATHEMATICS INSTRUCTORS REGARDING FACTORS AFFECTING STUDENT SUCCESS

Samia Aguirre
B.S., University of Southwestern Louisiana, 1982
M.B.A., California State University, Bakersfield, 1987

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A Dissertation

by

Samia Aguirre

Approved by Dissertation Committee:

__________________________
Robert Pritchard, Ph.D., Chair

__________________________
Deborah Travis, Ed.D.

__________________________
Marybeth Buechner, Ph.D.

SPRING 2013
Student: Samia Aguirre

I certify that this student has met the requirements for format contained in the University format manual, and that this dissertation is suitable for shelving in the library and credit is to be awarded for the dissertation.

Caroline Turner, Ph.D.

Graduate Coordinator

Date
DEDICATION

This dissertation is dedicated to my family. To my best friend and husband Stephen and to our children Christine and Stephen, who continuously offered support, love, and encouragement throughout this process; and to my family in Lebanon for their encouragement and love throughout this journey.
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CURRICULUM VITAE

EDUCATION

Masters of Business Administration, 1987
California State University, Bakersfield

Bachelor of Science, Computer Science, 1982
University of Southwestern Louisiana, Lafayette

PROFESSIONAL EXPERIENCE

California Public Employees’ Retirement System - Sacramento, California
Senior Information Systems Analyst, 2008 – Present
- Acted as an Information Technology Liaison between Information Technology division and business program divisions (Pension, Investments, Health, and Administration) within CalPERS.

Department of Motor Vehicles - Sacramento, California
Staff Information Systems Analyst, 2006 - 2008
- Coordinated Legislative Bill Analysis process between Information Technology division and business program divisions.
- Administered the Legislative Database system for the department - Granted access to users, managed and maintained the system.
- Conducted training sessions on the Legislative Database system for technical and business program divisions.

Employment Development Department - Sacramento, California
Staff Programmer Analyst, 1991 - 2006
- Performed structured analysis, design, coding, and testing utilizing project management methodologies.
- Developed software on a UNIX platform, using “C” programming language, Embedded Structured Query Language (SQL), Informix Database and Vermont Views screen designer.
- Developed software programs on a mainframe platform, using “COBOL”, “DYL280” and “JCL” programming languages.
- Installed software packages, evaluated user documentation manuals and provided technical support for business program divisions.
- Facilitated Joint Applications Development sessions between the technical staff and the business program divisions.
- Mentored new staff programmers and assisted in developing the current published software testing standards for the department.

California State University - Sacramento, California
Computer Science Adjunct Professor,  1990 - 1991
- Taught Introduction to Computer Science - Fundamental concepts of computers, computation and programming.

Los Rios Community College District - Sacramento, California
Computer Information Science Instructor,  1989 - 1990
- Taught Introduction to Data Processing - Fundamentals of microcomputer hardware, software, operating systems, word processing, and database applications.
- Taught Microcomputer Applications/Electronic Spreadsheets - Introduction to spreadsheets design, and the use of mathematical concepts in creating spreadsheets.
- Taught Computer Familiarization - Introduction to computers, computer terminology, operating systems, word processing, and database applications.

National Education Corporation - Sacramento, California
Business and Technology Instructor,  1988 - 1990
- Taught Introduction to Computer Software Applications – Introduction to computer principles, operating systems, word processing and spreadsheets design.
- Taught Introduction to Accounting - Fundamental concepts of accounting, journals, ledgers, and financial statements.
- Taught Business Mathematics - Introduction to basic business mathematics skills and applications of mathematics in the business world.
- Evaluated microcomputer software applications and textbooks.

Bakersfield College - Bakersfield, California
Mathematics Learning Center Instructor,  1986 - 1987
- Supervised the Mathematics Learning Center and provided individualized instruction in lower and upper division mathematics courses.
Abstract

of

BASIC SKILLS MATHEMATICS: THE PERSPECTIVES OF COMMUNITY COLLEGE MATHEMATICS INSTRUCTORS REGARDING FACTORS AFFECTING STUDENT SUCCESS

by

Samia Aguirre

Basic skills education is one of the greater challenges facing higher educational institutions in the United States in the 21st century. Each year, students around the United States graduate high school unprepared to handle the demands of higher education. The following qualitative phenomenological study examines basic skills mathematics instructors’ perceptions regarding teaching methods, expectations, and attitudes that facilitate the success of basic skills mathematics students at community colleges. Interviews were conducted with seven community college basic skills mathematics instructors who currently teach basic skills mathematics at a Northern California community college. The three research questions were:

1. What are the basic skills mathematics instructors’ perceptions regarding the teaching methods that are most useful for facilitating student success in community college basic skills mathematics courses?
2. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ expectations on student success in their basic skills mathematics courses?

3. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ attitudes on student success in their basic skills mathematics courses?

Data analysis included text analysis, identifying and coding emerging themes, and interpreting the findings. During the data analysis process, the researcher identified the following emerging themes: tailored classroom instruction, supplemental instruction, innovative instruction, students willing to engage in the learning process, and connecting and building positive rapport with the students.

The findings of the study answered the three research questions. In answering research question one, the researcher concluded that the participants perceived that the flexibility they have in using diverse teaching methods allows them to meet the students’ needs, enhance the students’ receptivity of the subject taught, and create a supportive teaching and learning environment that facilitates students’ success. In answering the second research question, the researcher determined that the participants perceived that their high expectations for students to actively engage in the learning process and take charge of their own learning helps the students persist and succeed in any learning environment. In answering the final research question the researcher concluded that participants perceived that their positive attitudes help build positive relationships with
the students that include clear communication, trust and mutual respect. This study concludes that there is not one isolated factor that promotes students’ learning and success, but rather it is a combination of the participants’ teaching methods, expectations, and attitudes that help create a positive nurturing environment conducive to teaching and learning basic skills mathematics.
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Chapter 1

INTRODUCTION

Basic skills education is one of the greater challenges facing higher educational institutions in the United States in the 21st century. Each year, students around the United States graduate high school unprepared to handle the demands of higher education. Many of the graduates go on to attend college or enter workforce training (Mishel & Joydeep, 2006). It is estimated that there are 20.4 million college students in the United States (National Center for Public Policy and Higher Education [NCPHHE], 2010). Approximately 60% of incoming college freshmen students in the United States are not ready for college level work, although they are eligible to attend college (NCPHHE, 2010). It is estimated that 51.7% of students entering two-year colleges and 19.9% entering four-year colleges lack the foundation skills in reading, writing, and mathematics (The Center for Student Success, 2007; Levin & Calcagno, 2007). They lack the academic background to understand and manage college level material (The Center for Student Success, 2007; Pell Institute, 2005).

According to National Center for Education Statistics (NCES, 1996) many of the high school graduates who enroll in two-year colleges may need basic skills instruction. NCPHHE (2010) estimates that 67.7% of African American students, 58.3% of Hispanic students, and 46.8% of White students, are placed in basic skills courses. The opinions are varied regarding why the students are unprepared in mathematics; however, the concern and frustration among faculty, especially basic skills mathematics faculty and
administrators, is widespread (NCPPHE, 2010). According to the NCPPHE (2010), approximately 26% of high school graduates were considered proficient in mathematics in 2009. Public Policy Institute of California (2011) defined “proficient” as someone who demonstrates competency over challenging subject matter.

According to PPIC (2006) a high school graduate whose highest mathematics coursework is Geometry or below, is considered below proficient level in mathematics, while high school graduates who completed successfully a Calculus course, are considered to be at the proficient level. The level of high school mathematics completed before high school graduation is a predictor of academic success in college (Barth, 2003). High school students who complete mathematics coursework higher than Algebra II double their chances of completing and earning a college degree (Barth, 2003). Although mathematics is considered a crucial subject for succeeding in higher education coursework, 6% of high school students in the United States do not take any mathematics courses in their junior and senior years of high school (Barth, 2003). Approximately 42% of high school students who took the American College Testing (ACT) mathematics exam in 2009 scored a benchmark score of 22 or higher, an indicator of preparedness for college algebra (American College Testing, 2009).

In 2008 the National Commission on Community Colleges conducted a study that concluded the United States must improve the number of students who earn associate and bachelor’s degrees in order to retain its status as an economic leader (PPIC, 2011). The United States’ competitive advantage in the world economy relies on increasing the rates
of college degree attainment (PPIC, 2011). In 2010, President Obama convened the first White House Summit on Community Colleges and opened a dialogue on critical discussions on how to improve college graduation rates, produce better student outcomes and educate our future workforce. In response to the President’s request, the Lumina Foundation for Education (2011) continues its commitment in promoting open access, college success, and providing grants and scholarships to first-generation college students, low-income students, and students of diverse ethnicities. In addition, the Lumina Foundation offers grants for those committed to research to increase the higher education attainment rate to 60% by 2025, which represents an increase of 23 million graduates (Lumina Foundation for Education, 2011).

Although around 60% of incoming college freshmen students in the United States are eligible to attend college (NCPPHE, 2010), research shows that about 77% of the students entering community colleges have serious deficiencies in reading, writing, and/or mathematics skills (NCPPHE, 2010). Some believe that the lack of postsecondary readiness leads to a rising need for basic skills instruction (Ryu, 2009). Perhaps the lack of preparedness may be reduced by adopting and implementing standards that align high school curriculum to freshmen college courses and designing 12th-grade English and mathematics courses that prepare high school graduates for college-level English and mathematics (Attewell, Lavin, Domina, & Levey, 2006).

In the literature the terms “remedial education” and “basic skills education” are used interchangeably to describe students who enter college with lower level skills
(Attewell et al., 2006). In the postsecondary context the term remedial often carries negative connotations (Casazza & Silverman, 1996; Stuart, 2009). Therefore, the researcher will use the term basic skills instruction throughout the study.

Basic skills instruction is a common institutional answer to students’ overall lack of academic preparation for college education (Roska & Calcagno, 2008). Basic skills instruction is a result of academic inability to perform college level work and a result of insufficient student preparation for postsecondary education (Roska & Calcagno, 2008). Some believe that the lack of readiness for college is an indication that the K-12 education system is failing to adequately prepare students for higher education (Howell, 2010). Other factors that may impact the students’ preparedness for higher education are socioeconomic status, minority status, parents’ education level, and students’ attitudes and aspirations (Terenzini et al., 2001).

The surge in the numbers of unprepared/underprepared college students in basic skills mathematics and the high percentage of students that need to take basic skills education courses is alarming according to the Academic Senate for California Community Colleges (ASCCC, 2006). While NCPPHE (2010) estimates that 60% of students entering college may not be ready for college-level work, other studies estimate that 29% of students entering four-year public colleges, and 43% of students entering two-year public colleges need basic skills instruction (Howell, 2010).

The Alliance for Excellence in Education (2011) estimates that direct cost of basic skills instruction to the nation is $3.6 billion, and the cost in lost wages to the nation is
estimated to be $2 billion. Figure 1 depicts the United States total remediation costs (Alliance for Excellence in Education, 2011).

![Figure 1. U.S. Total Remediation Cost](image)

Although basic skills instruction costs are high, some provision must be in place for students who enter higher education underprepared or unprepared (Bahr, 2012). Proponents of basic skills instruction in college argue that it can be an effective instrument to improve access to college, while opponents claim that the costs of basic skills education outweigh the benefits (Bahr, 2012; PPIC, 2011). Students who are referred for basic skills instruction may not be eligible to enroll in credit bearing courses (Conley, 2007). They may pay fees associated with basic skills instruction (Bahr, 2012; PPIC, 2011).

Basic skills instruction can impede or delay students’ progress toward obtaining a degree and may place students at high risk for not completing a degree or transferring to a
four-year university (Conley, 2008). To evaluate the effectiveness of basic skills instruction, recent studies (Boatman & Long, 2010; Calcagno & Long, 2008; Martorell & McFarlin, 2011) used regression discontinuity research design, a method used for determining whether a program is effective (Imbens & Lemieux, 2008), and found no positive effects of basic skills education on long-term retention, degree attainment, or college completion rates. A low percentage of students who require basic skills instruction will go on to earn a college degree (Howell, 2010). According to the NCPPHE (2010), 58% of students who do not need basic skills education earn a bachelor’s degree, compared to 27% of students who are enrolled in basic skills mathematics. Among community college students needing basic skills instruction, less than 25% may earn an associate degree or earn a certificate in eight years (The Center for Student Success, 2007). A possible reason for the low college completion rates of students needing basic skills instruction may be that few complete their basic skills education course sequence (Carnegie Foundation, 2012; The Center for Student Success, 2007).

At the California state level, in 1960 the legislatures passed the Donahoe Higher Education Act, set the foundation for the California Master Plan for education. This plan guarantees universal access and choice for students to the community colleges regardless of their economic status (California Master Plan, 1960). The California Master Plan (1960) differentiates the functions and admission criteria among the public postsecondary education institutions in California. University of California (UC) system can select from
the top 12.5% of the high school graduating class. In order to be considered for admission the high school graduates must complete a minimum of fifteen college preparatory courses, have a high school Grade Point Average (GPA) of 3.0 or better for residents of California and a GPA of 3.4 or better for nonresident of California, and meet the examination requirement (University of California, 2010). California State University (CSU) system can select from the top one third (33.3%) of high school graduating class. The high school graduates must complete a minimum of fifteen college preparatory courses and have a high school Grade Point Average (GPA) of 3.0 or better for residents of California and a GPA of 3.61 or above for nonresident of California (CSUS, 2012). Examination scores such as SAT and ACT may be used as admission criteria at some impacted campuses (CSUS, 2012). According to PPIC (2006), the California community colleges were designed to be an open access system capable of admitting anyone who is a high school graduate, is over the age of 18, or has the ability to benefit from instruction regardless of their economic status.

In California, approximately 85% of community college freshman students need basic skills mathematics instruction, while about 70% need basic skills English instructions (PPIC, 2011). This is representative of many community colleges in the United States whose mission is to provide open access to all segments of society with equal and fair treatment to all students, deliver quality basic education at affordable costs, offer workforce training, and provide courses to prepare students to transfer to four-year colleges (Kirst & Bracco, 2004; McCormick & Lucas, 2011; Vaughan, 2000; Venezia et
According to Mullin (2010), “community college provide, access to and opportunity for, education through courses that serve as the foundation for a career, a new life, or a new perspective” (p. 3). Community colleges are committed to improving completion rates without sacrificing their commitment to access and quality of education (Mullin, 2010).

**Problem Statement**

Too many high school graduates are academically unprepared or unable to perform college level mathematics. About 40% of community college students nationwide referred to basic skills mathematics courses, never enroll in basic skills mathematics classes (The Center for Student Success, 2007). Of the students who enroll in basic skills mathematics, a small percentage of these students, approximately 20%, complete their course sequence within three years of initial enrollment (The Center for Student Success, 2007). It is estimated that 85% of students entering community colleges in California need basic skills mathematics education (PPIC, 2011).

The low rates of college ready students are considered barriers to earning higher wages and competing for better jobs. The median annual salary of a high school graduate is $32,136; while a graduate with a bachelor degree may earn $52,624 (PPIC, 2011). To better prepare to earn higher wages and compete for better jobs, students must be ready to understand and manage college level course work (NCPPHE, 2010). For students to be ready for college, they need to demonstrate basic reading, writing, and mathematics skills (Greene & Forster, 2003). Research continues to show that students who do not have
these basic skills when they graduate high school are more likely to drop out of college or may take longer to graduate (Attewell et al., 2006). According to Robyn Toman, a mathematics professor at Anne Arundel Community College in Maryland, basic skills mathematics is a “dream killer” for many students that are unprepared or underprepared in mathematics (Carnegie Foundation for the Advancement of Teaching, 2012). Basic skills mathematics is the most frequently failed course at community colleges (Carnegie Foundation for the Advancement of Teaching, 2012). Students struggle with basic skills mathematics courses. Only 30% of these students pass all of their basic skills mathematics courses (Attewell et al., 2006). According to the ASCCC (2006), approximately 27% of students who require a basic skills mathematics course graduate with a bachelor’s degree.

There are many possible reasons why a large number of students may require basic skills education, especially at the community colleges (The Center for Student Success, 2007). Some attribute the need for basic skills education to the fact that at two-year colleges many of the students are older, non-traditional students. The average age of students enrolled in California community college system is 28 years old (Eagan & Jaeger, 2009). About 60% of students enrolled in California community college system are part time students (Eagan & Jaeger, 2009). They may have been away from the classroom for a number of years by the time they take placement tests (American Association of Community Colleges (AACC; 2012).
Community colleges often represent the stepping stone for many students, including students who plan to transfer to four year colleges (Quigley & Bailey, 2003). Researchers have debated the role of taking basic skills courses in facilitating community college student transfer (Eagan & Jaeger, 2009). Merisotis and Phipps (1999) emphasized the need for basic skills education in helping unprepared students to improve academically. But according to a study by Terenzini et al. (2001), students at the community colleges who enrolled and completed basic skills mathematics courses were 4% more likely to transfer to a four-year college, while students who enrolled and completed basic skills reading classes decreased their transfer likelihood by 4% (Terenzini et al., 2001). In addition, some literature suggests that students at the community colleges with higher percentages of part time faculty may not establish networks of information that facilitate in the transfer to a four-year university (Jaeger & Hinz, 2008). Some of the part time faculty may be less engaged, less available, and less satisfied (Eagan & Jaeger, 2009; Levin & Calcagno, 2007).

Remediation rates tend to predict the probability of students ultimately earning a degree (Pell Institute, 2005; PPIC, 2011). Often students pay for basic skills courses, but they may not earn college credits. Having to take a basic skills course may impact students’ schedules both academically and financially, which may cause them to dropout (Bailey, Jeong, & Cho, 2010). The dropout rate at higher education institutions in the U.S. is approximately 50% (Swail, 2004). Higher education institutions commitment is vital to the retention and success of all students. Creating supportive social and
educational programs that promote and serve the students’ needs, and provide resources and incentives for program participation that reach out to faculty and staff is especially central to improving the retention and success rates of disadvantaged and low income students (Nevarez & Wood, 2010; Swail, 2004).

**Nature of the Study**

The purpose of this qualitative study is to examine mathematics instructors’ perceptions regarding teaching methods, attitudes, and expectations that facilitate the success of basic skills math students at the community colleges. This study will be conducted at one Northern California community college. The researcher conducted the study using open-ended (qualitative), semi-structured interview questions to gather data to answer the following research questions:

4. What are the basic skills mathematics instructors’ perceptions regarding the teaching methods that are most useful for facilitating student success in community college basic skills mathematics courses?

5. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ expectations on student success in their basic skills mathematics courses?

6. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ attitudes on student success in their basic skills mathematics courses?
The literature notes many factors perceived by instructors to impact student learning, but instructors’ teaching methods, expectations, and attitudes, appear to be the most prominent (NCPPHE, 2010; Ding, Li, Piccolo, & Kulm, 2007; Rosenthal & Jacobson, 1968). Although the researcher focused on these three factors in this study, the researcher was open to other factors that may emerge from the interviews with the seven participants. A more detailed description of the research design, methodology, participants, data collection, and analysis are discussed in Chapter 3.

**Theoretical Framework**

Mathematics is one of the most widely used subjects in the world in addition to the use of language (Howson, 1984; Parsons et al., 2009). It is used throughout the world in many fields, including medicine, engineering, the natural sciences and the social sciences. Students’ ability to succeed in college education relies on improving the odds of success in basic skills mathematics (Parsons et al., 2009). According to Bandura (1997) success in mathematics coursework motivates students to set higher goals and put more effort into reaching those goals. But how basic skills mathematics courses are taught determines whether students will succeed (ASCCC, 2006). There is a need to understand the theories that are appropriate to teaching and learning basic skills courses, such as English and mathematics (Boylan, Bonham, Jackson, & Saxon, 1994; Garrett, 2010; Roueche & Roueche, 1999). One of the main learning theories is *constructivism*. According to Fosnot and Perry (1996), *constructivism* is “a psychological theory of learning that describes how structures, language, activity, and meaning-making come
about, rather than one that simply characterizes the structures and stages of thought, or one that isolates behaviors learned through reinforcement” (p. 34). Another theory that is applicable to this study is resiliency theory, because it focuses on students that experience positive outcomes in life in spite of their low-income background and minority status (Bosworth & Earthman, 2002).

Constructivist Theory

No thought, no idea, can possibly be conveyed as an idea from one person to another. When it is told it is to the one to whom it is told another fact, not an idea... Only by wrestling with the conditions of the problem at first hand, seeking and finding his own way out, does he think.


Constructivists believe that people learn best when actively engaged in constructing their own knowledge (Bransford, Brown, & Cocking, 2006; Hsueh, 2005). Some of the great constructivist philosophers that developed theories regarding learning and teaching are John Dewey, Jean Piaget, and Jerome Bruner. Dewey (1916) believed that constructivism takes an interdisciplinary perspective. It draws upon educational, sociological, philosophical and psychological theories. The constructivist theory is connected with the teaching methods that support contextual learning and help students succeed in learning basic skills mathematics (Boroch et al., 2010). According to Bruner (1985), learning is a social process. People build new concepts and new knowledge on prior and existing knowledge (Powell & Kalina, 2009). Piaget’s (1985) view of constructivism is based on his interpretation of the psychological development of individuals. Individuals learn through discovery and understanding of ideas (Hsueh,
Knowledge emerges from situations by which learners have to draw them out of meaningful experiences (Novak, 1977; Piaget, 1976). Knowledge is based on students’ active participation in critical thinking and problem solving regarding a learning activity (Bransford et al., 2006; Dewey, 1916).

Basic skills mathematics students that are culturally and linguistically diverse would benefit from teaching and learning process that is culturally responsive to their needs (Kozeracki, 2005; Nieto, 2000). According to Ladson-Billings (1995), cultural relevant pedagogy aids students in their learning process because it allows them to build new knowledge on prior knowledge and skills. Culturally relevant pedagogy offers ways for students to keep their cultural identity, help them understand themselves and their peers, develop social interactions, while learning and succeeding in their coursework (Ogbu & Simons, 1998).

**Resiliency Theory**

According to Benard (2004), resiliency describes people who have overcome hardships and risk factors through self-efficacy. Werner (2005) states that programs such as building a caring community with caring adults can make a significant difference in the adaptation of individuals to adversity they encounter. In the context of this study, caring teachers and teachers’ high expectations, and building relationships with the students that allow for engagement in teaching and learning will increase the chances of student success (Benard, 2003).
The term resilience has been used to identify three types of events: a) Persons who have experienced painful events but have been able to improve, b) Individuals who belong to high-risk groups but who have more positive results in life than anticipated, and c) Individuals who show encouraging adaptation and success in the face of life stressors (Masten, Best, & Garmezy, 1990; Werner, 2005). According to Werner (2005), students who struggled with poverty and were exposed to environmental risk factors but had nurturing, caring, and positive relationship with an adult from childhood were able to achieve success in life and become caring, confident adults themselves. In chapter 2, the literature review, the researcher will discuss the resiliency theory, the three types of events, and how they relate to this study in great detail.

**Operational Definitions**

Before examining the literature for this study it is necessary to clearly define the major terms used in this study.

**Basic Skills**

“Basic skills are those foundation skills in reading, writing, mathematics, learning skills, study skills and English as a Second Language which are necessary for students to succeed in college-level work” (The Center for Student Success, 2007, p. 4).
Basic Skills Mathematics

This term refers to credit and non-credit mathematics concepts, operations, and competencies that students need to master before they pursue college-level mathematics (The Center for Student Success, 2007).

Basic Skills Mathematics Instructor

For the purpose of this study, basic skills mathematics instructor is a faculty member who is currently teaching basic skills mathematics courses at the community college or have taught basic skills mathematics courses in the past.

Completion Rate

This term is defined as percentage of students who do not withdraw from class and who receive a “C” grade or better.

Course Success

This term is defined as passing a basic skills mathematics course with a “C” grade or higher.

Resilience

This is an individual’s ability to generate social, biological, and psychological factors in order to adapt, resist, and strengthen him when faced with environmental risk, thus producing individual, social, and moral success (Rutter, 2000).
**Teachers’ Attitudes**

This term refers to thoughts and feelings regarding some object, person, or behavior that is favorable, unfavorable, or neutral (Pryor & Pryor, 2004). Attitude is a disposition (Oskamp & Schultz, 2004).

**Teachers’ Expectations**

One of the definitions for teacher’s expectations is a teacher’s prediction about how much academic growth a student will make over a set period of time Cooper and Good (1983). For example, according to Cooper and Good, students who are labeled “slow” get fewer opportunities to learn new material than students who are labeled “bright.” Cooper and Good define expectations as presumptions that teachers make about the academic achievement of students.

**Teaching Method**

This term refers to an instructional procedure usually well-defined and specific for reaching an educational objective. It can be thought of as “how” to teach, involving instructional decisions and actions (National Council of Teachers of Mathematics, 2000).

**Assumptions and Limitations**

This section addresses many of the limitations inherent in conducting a phenomenological qualitative study including site selection and selection of the participants, as well as any possible biases during the process of data gathering and data analysis (Creswell, 2009). It must be also noted that this study relied on self-reported
data, participants’ perceptions of useful teaching methods, their attitudes, and expectations, which sometimes can suffer from lack of accuracy (Creswell, 2009; Stake, 1995). This qualitative study aimed to study participants at one Northern California community college.

In this study the researcher conducted purposeful sampling and selected seven basic skills mathematics teachers who ultimately were interviewed as participants in the study. The selection of participants was based on their current status or previous status as instructors in basic skills mathematics program at the community college.

The purpose of studying these professors was to learn from them the teaching methods they employed, their attitudes toward their students, their expectations of students. The study examined how they perceived whether the teaching methods, attitudes, and the expectations helped the basic skills mathematics students succeed in completing their coursework. Since participants’ selection was limited to one Northern California community college, the results may not allow for generalization to larger population but will have limited generalizability. Other factors that limit generalizability of the results are the small sample size and the fact that they were not randomly selected (Merriam, 2009).

**Significance of the Study**

This study is significant because currently there is a gap in the literature when it comes to identifying teaching methods that are perceived by faculty to be the most useful in teaching basic skills mathematics at the community college level.
Teachers spend their entire profession searching for successful teaching methods. This search may be crucial when it comes to teaching basic skills, especially mathematics, in higher education. According to Boylan et al. (1994) there is a variety of teaching methods that are used in basic skills education programs. This study explored how, or whether these teaching methods are applied with success to teaching basic skills mathematics at the community colleges.

While the participants in this study are limited to one community college in Northern California, the outcome may provide basic skills mathematics instructors at similar community colleges data that could benefit them in their teaching positions. Additionally, policymakers could use the data to bring attention to what the instructors perceive as useful teaching methods, and perhaps allocate funding to professional development where faculty can share their ideas of what works best for them.

This study was predicated on examining the journey of seven basic skills mathematics instructors and how the journey helped them form their perceptions about student success. The researcher was seeking to create a better understanding of whether the instructors’ perceptions play a role in the learning process and in the success of students who enter the community college needing basic skills mathematics instruction. The researcher hoped that this study may help shed some light, from the faculty perspective, on how to increase student completion rates in basic skills mathematics at the community colleges. Success in basic skills mathematics may potentially predict students’ success and chances for completion of a two-year degree as well as transfer to a
four-year institution (Howell, 2010; Lumina Foundation for Education, 2011). As previously stated, the United States competitive advantage in the world economy relies on increasing the rates of students’ graduation and college degree attainment (Howell, 2010).

**Conclusion and Remainder of the Study**

Education is an investment in people that pays off in economic growth (Ignash, 1997). The economic prosperity and functioning of a nation depend on its physical and human capital stock. Education increases the productivity and efficiency of workers, which in turn impacts the whole community and the nation (Ignash, 1997). The earning power of an educated society is high. Therefore, in improving basic skills education and helping students succeed, the whole society will benefit from educated, problem solvers, tax paying citizens who can contribute to their communities and the economy. This study aimed at contributing to the research base for defining teachers’ perceptions about their impact on student success in basic skills mathematics.

Chapter 2 provides a detailed literature review that analyzed the role of community colleges, the history of basic skills education, the characteristics of effective mathematics instructors, the different teaching methods used in basic skills math, attitudes and expectations of basic skills mathematics teachers and the impact on the learning process. Chapter 3 describes the research methodologies used in this qualitative study, including the qualitative protocol. Chapter 4 is a presentation, interpretation and analysis of the data collected in the study. Chapter 5 summarizes the findings of the
study, discusses the implications of the findings as well provides recommendations for action and for further future research.
Chapter 2

REVIEW OF RELATED LITERATURE

Chapter 2 provides a broad review of the literature and research related to the history of community colleges, basic skills instruction in general and basic skills mathematics in particular. The chapter discusses the research on the different teaching methods used by basic skills mathematics instructors, their perceptions of the useful teaching methods that impact learning, and their experiences and observations on how their attitudes and expectations of basic skills mathematics students help the students to understand, learn, and achieve positive results in their basic skills mathematics courses.

Historical Background

The Emergence of Community Colleges in the United States

Community colleges play a very important role in the education of traditional and non-traditional students. They are a vital point of access to higher education for all students, especially minority students, students who come from low-socioeconomic backgrounds, and historically underrepresented students. Many of these students would not have the opportunity to attend college if two-year public institutions were not available (Alfonso, 2006).

The history of community colleges dates back to the early 1800s. During that time there was a belief that education should be practical. In 1826 the president of Brown University, Francis Wayland, proposed offering a certificate plan for students who were not prepared to attend a four-year university or earn a college degree and that the
certificate should be focused on meeting the needs of farmers, manufacturers and merchants (Vaughan, 2000). In the second half of the nineteenth century, there were many suggestions around the idea of the universities dropping their freshmen and sophomore years and having the high schools take the instruction of these two years, leaving the universities to concentrate on the junior and senior years (Cohen, 2005).

As early as 1851, Henry Tappan, the president of the University of Michigan, proposed that higher education should be reorganized after the German model of university system that separates the first two years of college from the last two years (Diener, 1985). Many of the educators believed that the first two years in college work was very closely associated with the last two years of high school, while the junior and senior years were specialized and must be restricted to the intellectual elite who were preparing for careers in science, engineering, and research fields (Eells, 1931). In addition, many of the educators felt that the students were not mature enough to handle the college level work but remained enrolled in college because of the dishonor of leaving their program without graduating (Diener, 1985).

In 1892, the president of the University of Chicago, William Harper, received approval from the Board of Trustees to restructure the university into two divisions by separating the first two years from the last two years (Nevarez & Wood, 2010). In 1901, he established an Associate of Arts degree for students completing the freshman and sophomore years. During the same year, Harper and J. Stanley Brow, superintendent of
schools at Joliet, Illinois, created the first junior college that was academically similar to the first two years of a four-year university (Eells, 1931; Vaughan, 1982).

In 1910 Fresno Junior College was the first junior college to open its door in California with 20 students and three instructors (Vaughan, 1982). In 1917, the federal government passed the Smith-Hughes Act. This was the first vocational education act for secondary education. It required each state to establish a board for vocational education (Diener, 1985). This expanded the role of the junior colleges was to provide vocational education for technicians, accountants and clerical help (Frye, 1992). Socio-economic changes and business needs for trained workforce fostered the need for expansion of the junior college curriculum (Frye, 1992).

Two main events that took place in the 1940s brought major changes to higher education. In 1944 President Franklin D. Roosevelt signed into law the Servicemen’s Readjustment Act, or G. I. Bill, that provided veterans of the Second World War benefits that included funds for college education (Diener, 1985). This act provided the foundation for the federal government to declare that no one should be refused higher education based on financial need. In 1947, President Harry Truman established the first Commission for Higher Education for American Democracy (Vaughan, 1985).

The Commission for Higher Education for American Democracy (Vaughan, 1985) promoted increased access to college, and supported the creation of a network of junior colleges throughout the country. These junior colleges would offer general education classes, vocational education, serve as cultural centers for the community, offer
continuing education for adults, and would charge no tuition (Vaughan, 1985). The commission also believed that if the United States of America was to be a role model for democracy, the country must provide equal opportunity for all people (Vaughan, 1985). This Commission stated that access to higher education was no longer considered a privilege but a right (Frye, 1992).

The Emergence of Community Colleges in California

The “open door” policy is important for community colleges in California. The “open door” policy was coined to signify that anyone who could benefit from junior college could enroll regardless of their socioeconomic status (Vaughan, 1985). Although the junior colleges were considered part of higher education, many educators still believed that the coursework in the junior colleges still resembled the last two years of high school, thus causing the junior colleges to be viewed as inferior to universities (Vaughan, 1985).

The community colleges were given the mission to be different things for different people (Vaughan, 1985). In 1965, in an effort to align the junior colleges with the universities, the Coordinating Council for Higher Education approved the separation of junior colleges from high school districts and dropping the “junior” from the name and replacing it with “community” (Diener, 1985).

At the California state level, in 1960 the legislature passed the Donahoe Higher Education Act, which set the foundation for the California Master Plan of education. Most would agree that the main influence that the California Master Plan (1960) came to
have on the community colleges was that the community colleges were for the first time considered a part of the higher education system (PPIC, 2006).

This plan guarantees universal access to quality postsecondary education and choice for students regardless of their economic status. The plan also differentiates in the functions and admissions criteria among public postsecondary education institutions; the University of California (UC) system, California State University (CSU) system, and the largest higher education system in the country, the California Community Colleges system (PPIC, 2006). Although the California Master Plan guarantees universal access, it does not guarantee success. The Public Policy Institute of California (2011) predicts a shortage of one million college educated workforce by 2025 unless the state is able to improve the rates of college enrollment and completion.

**Legislation**

Various federal laws were enacted to provide workforce development for a wide range of people or to offer access to higher education. The legislation included the Carl D. Perkins Vocational and Technical Education Act in 1998, Workforce Investment Act in 1998, Temporary Assistance for Needy Families in 1997 and Adult Education and Family Literacy Act in 1998. The community colleges were identified as the method for the delivery of these services (Somerville, 2005). With these demands placed on the community colleges, the limited resources available for the community colleges and an increase in California’s culturally diverse population due to immigration and birth rates, community colleges have seen an increase in demand for their services (Cohen, 2005).
These services included the increase in the number of high school graduates in need of basic skills education (Somerville, 2005).

In the state of California, the federal legislation is supported by state laws regarding California community colleges. In 1988, Governor George Deukmejian signed California Assembly Bill 1725 (Howell, 1997). AB 1725 included provisions that emphasized the role of California community colleges as postsecondary institutions dedicated to offering basic skills courses, providing vocational training, and transferring students (Howell, 1997). California legislators created laws that are known as the California Education Code. The policies and regulations devoted to the community colleges in the Education Code are known as Title 5. The Community Colleges Board of Governors is responsible for the interpretation of Title 5 regulations. The implementation and compliance of Title 5 regulations is the responsibility of the California Community Colleges Chancellor’s Office (California Community Colleges Curriculum, 2011).

One of the voter approved tax laws that fundamentally changed local cities and schools revenue sources and had a negative impact financially on public education is Proposition 13. Proposition 13 is a tax reform that shifted power from elected representatives to the voters (PPIC, 2006). It was enacted in 1978 at a time of increasing housing values and property taxes. Proposition 13 limits the property tax rate to 1% of the assessed value of the home at the time of purchase and controls the annual tax increases to no more than 2% until the home is sold (PPIC, 2006). In addition, a two-thirds vote requirement for any new taxes was included in the reform (PPIC, 2006).
The reduction of property tax revenues, national economic downturns, and high costs of attending four-year colleges is increasing the number of applicants at the community colleges (PPIC, 2011). Community colleges are challenged to attract older students, part-time working adult students, minority students, and students from low socio-economic backgrounds (PPIC, 2011). This led to an increase in demand for English as a second language, customized training for specific industries, vocational and technical certificates, and high demand for basic skills education instructional services at the community colleges (Cohen, 2005; Lerman & Schmidt, 1999).

Community colleges have offered basic skills instruction since their establishment in the early twentieth century (Boylan et al., 1994). According to NCES (1996), 99% of the country’s public community colleges offer one or more basic skills courses and the massive numbers of unprepared students in higher education serve as an evidence of an enormous need for basic skills education (Boylan, 2002). In addition, basic skills education is becoming increasingly important to individuals who are returning to college to update their skills, get a job, or keep one (Boylan, 2002). Many of these individuals are not prepared for college courses and have to complete basic skills education instruction (Caverly, Paulson, & Reardon, 2011). Unfortunately, community colleges across the country are having a challenging role in handling the influx of large number of students that are underprepared to handle college-level work (Boylan, 2002).

While not all California community colleges use the same assessment instruments, many use college placement tests such as Compass, a computerized
placement test developed by American College Testing, and Accuplacer, a computerized adaptive test developed by the College Board (ACT, 2009). The placement test results provide useful information to students, academic advisors, and counselors about their academic skills that will help determine whether students would benefit from basic skills mathematics, reading, and writing coursework (AACC, 2012).

Some research shows that basic skills education helps students who are returning to school after years of absence and students who might be proficient in some of the subject areas, but lack the skills in English or mathematics (Attewell et al., 2006). Advocates of basic skills education state that basic skills instruction is an important factor in improving the educational opportunity for unprepared students. Many of these students are low-income, first-generation college students, and/or from historically underrepresented populations (Jenkins & Boswell, 2002).

According to Boylan (2002), basic skills education is necessary for community colleges’ survival because it supports fiscal development and maintains necessary levels of student enrollment that allow community colleges to continue their day-to-day operations. Boylan (2002) also suggested basic skills instruction strengthens the academic standards of the community colleges and helps many underprepared students succeed and transfer to a four-year university. Basic skills mathematics and basic skills English courses improve the chances of staying in college and attaining a degree (Bailey et al., 2010). Some frequently worry about the effectiveness and the increasing costs to the nation of basic skills education programs (Attewell et al., 2006). According to
Boatman and Long (2010) some of the students enrolled in basic skills courses have more negative results than those not enrolled in basic skills education classes.

It is important to realize that the relationship among attaining college education, economic success, and the changing demographics in the United States of America necessitate that higher education institutions, especially community colleges, become creative in their methods to educate the rising numbers of students that lack the academic skills to succeed in college (Attewell et al., 2006). Data that supports the overall efficacy of basic skills education suggests that students who successfully complete basic skills mathematics courses at two-year colleges increase their chances of academic success, transfer, and graduation (Boatman & Long, 2010).

In 2012, California legislatures passed a key legislation SB 1456, known as Student Success Act of 2012. This key legislation will pave the way for the implementation of the recommendations of the California Community Colleges Student Task Force (California Community Colleges [CCC], 2012). The Student Task Force developed strategies to improve graduation rates at all of 112 community colleges in California. The Student Success Act of 2012 would realign the community colleges focus on the core missions of basic skills instruction, certificate and degree fulfillment, workforce training, and preparing students for transfer to four-year educational institutions (CCC, 2012). The Student Success Act would require eventually all students to participate in an assessment exam to guarantee that students are placed in the appropriate courses, increase transparency and student success, and increase the
completion rates by creating incentives for students to attain their educational goals and graduate (CCC, 2012).

**Role of Community Colleges in Basic Skills Education**

The increase in the demand for highly skilled workforce in the United States and rise in the numbers of English language learners has put a great deal of pressure on public educational institutions to produce a skilled workforce that can meet the challenges of a complex and global economy (Jenkins & Boswell, 2002). At the same time, the number of adult learners and first-generation college students entering community colleges in need of basic skills education is also increasing (Jenkins & Boswell, 2002).

The demand for workers with high levels of technical skills and the ability to apply critical thinking skills continue to rise while the numbers of students that need basic skills education continues to soar (Bailey, 2005). Although there is some consensus regarding the increase in demand for basic skills instruction, there is little consensus on who should provide basic skills instruction (Bailey, 2005).

According to Boylan (2002) community colleges do not have the capability to handle the sudden flow of large numbers of unprepared students, students who were denied entrance to four-year public institutions, or students who chose to attend community colleges because they tend to be less expensive (Boylan, 2002). But four-year colleges are gradually deferring students who are underprepared in basic skills mathematics, English, reading and writing to community colleges (Mumper, 2003).
Studies have shown that some college students enter basic skills instruction programs because they lack mathematics skills, reading skills, and writing skills (Ryan, 1997). Data show that remedial mathematics courses in the community colleges have higher number of Latino and African American students in comparison to White and Asian students (Bailey, 2009). In an environment of greater accountability and economic uncertainty, many questions have risen regarding the value of community colleges’ basic skills programs and public perceptions around the effectiveness of transitioning unprepared students into four-year colleges (Boylan, 2002).

The Student Aid and Fiscal Responsibility Act

In 2009, in responding to the need of increasing the college graduation rates and improving basic skills education, President Obama signed into law the Student Aid and Fiscal Responsibility Act, a community college initiative. This law is designed to do the following: a) Increase graduation rates, b) Modify the student loan process, c) Increase the amount of financial aid for poor students, and d) Increase financial support to community colleges across the country (Martorell & McFarlin, 2011). The President allocated $12 billion in funds to increase the number of college graduates by 5 million by the year 2020. Of the funding, $9 billion will be used to award grants through an “access and completion” fund. In addition, $2 billion will be allocated for the “Community College and Career Training Initiative” (Frederick, 2010). Of the nation’s 18.7 million college students, 6.7 million attend community colleges (Frederick, 2010).
The Student Aid and Fiscal Responsibility Act has four main components: a) Performance reporting where data systems can collect, analyze, and maintain student data from the community colleges over time; b) Performance benchmarking where metrics on the effectiveness of community colleges in meeting education and employment objectives are collected and analyzed; c) Continuous improvement where an evaluation will be conducted by the Institute of Education Sciences by 2014, that assesses the effectiveness of the grant programs in improving the completion rates and employment outcomes; and d) Performance funding where incentives are created for the community colleges by requiring them to meet benchmarks in order to participate in the grant programs (Frederick, 2010).

The California Context

In California, the need to fulfill the demand of skilled workforce is growing. It is estimated that by 2025, 41% of the jobs will require a bachelor’s degree, while 35% of working age adults will have a bachelor’s degree (Howell, 2010). The need for educated workers is on the rise in California. The role of the community colleges is to promote an environment that develops within all students the skills, the knowledge, and the attitudes to succeed personally and professionally in life (AACC, 2012).

California community colleges mission is to provide open access to all students, deliver quality basic education at affordable costs, offer workforce training, and provide courses to prepare students to transfer to four-year colleges (Vaughan, 2006). Community colleges are becoming a stepping stone in helping all students, especially
underprepared students succeed in completing their educational goals, compete in the labor market, and transfer to four-year universities (Venezia et al., 2008). Many of these students would not be able to attend college if it were not for the open access policy and the affordable costs provided by the California community college system (Bailey, 2005).

California is required by the Education Code to provide basic skills education. To improve remedial education, increase college graduation rates, and meet the requirement of the California Community Colleges strategic plan, the California Community Colleges Chancellor’s Office created the Basic Skills Initiative (BSI), which is a collaborative project driven by the California community colleges system’s strategic plan program (The Center for Student Success, 2007).

Funding for the BSI is provided through a grant initiative from the California Community Colleges Chancellor’s Office, which started in 2006. This is a state wide collaborative effort to address ongoing basic skills education and English Skills Language needs of California Community Colleges students and provide support to all stakeholders involved, students, their instructors, and all administrative staff that support the basic skills program (The Center for Student Success, 2007). The purpose of the BSI is to improve curriculum, instruction, student services, assessment and campus culture in basic skills and ESL (The Center for Student Success, 2007). It requires information on best practices utilized and professional development to allow colleges to examine their basic skills instruction and English as a Second Language programs, and funds to ensure success of the initiative program (The Center for Student Success, 2007).
One of the main functions of the largest postsecondary education system in the world is to offer pre-collegiate and transfer courses in order to prepare students to transfer to four-year colleges (Bailey, 2005). Transfer focused students make up almost 50% of the California community college population. About 16% of these students are enrolled in vocational courses and about 14% of the transfer focused students are enrolled in basic skills education classes and/or English as a second language (AACC, 2012). About two-thirds of California State University system and one third of the University of California System graduates attended a community college before transferring (Pell Institute, 2005). On average, students who transferred to a four-year educational institution were in the community college system for four years (Roska & Calcagno, 2008).

The community colleges provide a significant point of access to higher education for many of the state’s low income and minority students (Bailey et al., 2010; Turner et al., 2008). Due to the flexibility of the system, about 80% of community college students in California stay in the workforce while taking classes (PPIC, 2006). About 1 in 10 students enter California community colleges to update their job skills or earn a certificate (PPIC, 2006). California community colleges play an important role in the education of women. Approximately 54% of all community college students are women, while 46% are men (PPIC, 2006).

California community colleges are essential for educating students from all racial and ethnic backgrounds. It is estimated that in 2003 about 30% of incoming students at the community colleges were Latino, about 40% were white, about 15% Asian/Pacific
Islander, about 8% African American, and about 7% made up Filipino, American Indian and other races (PPIC, 2006). California community colleges play a significant role in serving underrepresented groups and in reducing ethnic and racial inequalities in higher education. The California community college system has a challenging task of providing opportunities in higher education for a large and historically underrepresented student populations, perhaps without adequate funding (Pell Institute, 2005).

**Teaching Methods and Basic Skills Mathematics Instruction at the Community College**

There are some studies that suggest that institutional policies, the lack of culturally suitable pedagogy, and the extensive focus on K-12 educational environment impact student learning in mathematics (Ladson-Billings, 1995; Rogoff, 2003). Presenting basic skills mathematics concepts that are related to the students’ cultural backgrounds enables the students to make profound connections and strengthens their understanding of basic skills mathematics (D’Ambrosio, 2006; Rogoff, 2003).

The fundamental understanding of the important role basic skills mathematics faculty members play in the classroom in higher education may be lacking (Rousseau & Tate, 2003). This may lead to lack of appreciation for basic skills mathematics instructors teaching practices and how the methods they utilize can impact the learning outcomes of students (Ladson-Billings, 1995; Rousseau & Tate, 2003).
Role of Basic Skills Mathematics Faculty

The teaching methods and the students’ learning style may be influential in shaping how the students understand the learning environment and react to it (Landrum & McDuffie, 2010). Understanding the learning styles and becoming familiar with them may allow teachers of basic skills instruction to offer options in the classroom that would improve basic skills students learning process (McDuffie, 2004).

Theories and research studies discussing the effective teaching methods or “best practices” in basic skills instruction are ongoing. There has been a renewed attention to content and teaching methods in basic skills mathematics due to the large number of students entering colleges in need of basic skills mathematics instruction (PPIC, 2011).

In teaching basic skills mathematics, many college mathematics teachers use constructivist teaching that is developed on constructivist learning theory (Dewey, 1916; NCTM, 2000).

According to the American philosopher and educational reformer, Dewey (1916/2004), constructivist teaching is based on the idea that the learning occurs when people are actively engaged in the learning process and knowledge construction. The teacher is a partner in the learning process who directs the students to discover the meaning within the topic studied (Dewey, 1916/2004). Constructivist learning theory highlights the importance of knowledge construction as an alternative to knowledge replication (Landrum & McDuffie, 2010). Piaget, a distinguished philosopher and psychologist who placed great emphasis on children’s education, was convinced that
intellectual development is increased in individuals as they rebuild the ideas and concepts learned at earlier stages in their lives with new ideas (Hsueh, 2005). Constructivist learning theory states that all knowledge is built from a base of prior knowledge and people learn best when they are permitted to build personal understanding based on their experiences and reflections (Bransford et al., 2006).

In this study the researcher employed the constructivist learning theory in exploring the thinking, the experience, and the reflection associated with the role of teachers in educating the students in basic skills mathematics. Some of the students of basic skills mathematics are adult learners (Muir, 2001). Therefore, what follows is a review of adult learning theory and the beliefs behind the andragogy (Knowles, 1970). The cultural changes in the twentieth century, such as population mobility, technological advances, changes in the economic and political environments, led to redefining education as “a lifelong process of continuing inquiry” (Knowles, 1970, p. 41). In the 1950s, an influential study that focused on the process of adult learning was conducted by Houle (Knowles, 1970). As empirical research was conducted on how adults learn, researchers began to realize that there are differences between children and adult learners (Knowles, 1980). In the 1960s adult educators in Europe felt the need to classify this flourishing knowledge about adult learners into a theoretical model known as andragogy (Knowles, 1980). Andragogy as defined by Knowles (1980) is “the art and science of helping adults learn” (p. 43). The assumptions behind andragogy recommend that teachers and educators take into consideration the different experiences that adult learners
bring with them, when considering the education of adults (Knowles, 1980). The assumptions are that, as a person matures, a) he moves from having a dependent personality to a self-directed one and teachers have the duty to support the learner, b) adults are ready to learn when they feel the need to deal with “real-life situations” and the teacher has the obligation to provide an environment to help the learners find out their “needs to know” (Knowles, 1980), and c) adult learners have a larger and varied base of experiences that could provide wealth of knowledge for themselves and others in the learning process, so educators can tap into this knowledge and help the learners build on their prior experiences (Knowles, 1980; Drago-Severson, 2004).

In 2000, the National Council of Teachers of Mathematics (NCTM) advocated that the teacher should play the role of the facilitator that steers the learning experience to where the students want to create value (NCTM, 2000). Benard (2003) asserted that the instructor’s role is to help support the adult learner by providing guidelines and creating an atmosphere for the adult student to reach his own conclusion. Glasersfeld (1989) argued the responsibility of learning and the motivation for learning should belong to the learner. According to the constructivist learning theory, the teacher, acting as a facilitator, helps the adult learner build confidence in his ability to learn (Glasersfeld, 1989). Vygotsky (1978) believed that learners gain confidence and motivation when they are confronted with a difficult task and they complete it successfully.

The role of the basic skills mathematics teacher is to help the students connect new ideas to prior knowledge by selecting tasks or activities that expand on students’
existing knowledge and allows them to share their point of view (Howard-Hamilton, 2000). Sharing the point of view, “collaborative elaboration”, helps the students better understand the concepts discussed (Glasersfeld, 1989).

**Teaching Methods**

Some of the teaching methods used in basic skills education include traditional teaching approaches that are generally teacher-directed and follow specific steps of activities. In the traditional teaching method the teacher is the controller of the learning environment and holds power, responsibility and decision making concerning in relation to curriculum content and outcomes (The Center for Student Success, 2007). This lecture-based model of teaching is considered teacher-centered and may not provide students with valuable skills or lasting knowledge (The Center for Student Success, 2007). The constructivist teaching theory may be used in a lecture-based model if the students are sophisticated at the metacognitive level and are able to accommodate the gap between current and mature forms of the concept (Fosnot & Perry, 1996).

Other teaching and learning methods that will be discussed and rely on the constructivist learning model that connects to the teaching methods, include self-directed learning, where the emphasis is on active and discovery learning (Fosnot & Perry, 1996). Mayer (2004) proposed that for active learning to occur, the learners should be “cognitively active” during learning and the teachers use “guided practice” (p. 15). “Learning by doing” does not alone enhance the learning experience. It must be combined with “guided discovery” where the adult learner is guided through the concepts
by the instructor (Mayer, 2004). Another example of a learning style is inquiry-based learning (Bransford et al., 2006). Inquiry-based learning puts learners in problem-solving positions where they need to recognize frames of reference and using their imaginations to redefine problems from different perspectives (Mezirow, 1997).

To aid in the different learning styles, some basic skills mathematics teachers may use a variety of teaching methods. An example is contextualized instruction, which considers the context in which the learning occurs as essential to the learning process (Perin, 2005). In using contextualizing basic skills mathematics instruction, teachers seek to make the discussion and the activities to solve the problems more applicable to the real world and the culture that the learners live in (NCTM, 2000). NCTM (2000) in their standards for mathematics teaching document, *Principles and Standards for School Mathematics*, emphasized that culture plays an important role in mathematics instruction. It states, “because students learn by connecting new ideas to prior knowledge, teachers must understand what their students already know” (p. 18). In a culturally responsive pedagogy, educational institutions need to provide basic skills mathematics teachers with appropriate professional development opportunities to learn about the students’ culture (Demmert, 2001; Callins, 2006). Basic skills mathematics teachers must be aware and open to understand the different cultures around them in order to meet the students’ needs (Demmert & Towner, 2003). In culturally responsive pedagogy mathematics teachers understand the need to be open to learning on diversity issues and supportive of an inclusive learning environment (Howard-Hamilton, 2000).
Another teaching method is utilizing learning community instruction where support and structure of the adult learners is comprehensive and is based on the concept of collaborative learning (Cross, 1998). Cross (1998) defined learning communities as “groups of people engaged in intellectual interaction for the purpose of learning” (p. 4). According to Bruffee (1995), individuals construct knowledge by working together, building and forming mental frameworks to understand their surroundings. Learning communities are important in helping teachers and students work together to achieve positive student results (Cross, 1998). Whipple (1987) suggested knowledge is not transferred in a dictatorial way from faculty to students but as something that is interactive and where the students are actively involved. Research of student learning communities at the community colleges, such as the Bloom and Sommo (2005) study of the Opening Doors Program at Kingsborough community college in New York and Willet’s (2002) study of the Puente Project at Gavilan community college in California, demonstrate the benefits of the learning communities to adult learners by increasing their social, emotional, and intellectual skills (The Center for Student Success, 2007).

Examples of learning communities that increased the completion and persistence rates of basic skills mathematics students in college is the Math Academy learning community at Mount San Antonio College and the Math Performance Success learning community at De Anza College, both are California community colleges (The Center for Student Success, 2007). Supplemental Instruction and Tutoring is another teaching method that builds a strong bond between faculty, basic skills students and tutors (The
Center for Student Success, 2007). The Supplemental Instruction and Tutoring relies on the social learning theory that is derived from the work of Bandura and McClelland (1977) and states that students learn through modeling, observation, and interaction with peers that are more reliable “role models” because they went through similar experiences and succeeded (Bandura & McClelland, 1977). An example of a program that increased the success rates of basic skills mathematics students is Foothill College Math My Way Program, which focuses on mastery of concepts and provides dedicated tutoring for basic skills mathematics students (The Center for Student Success, 2007).

The use of Computer-Aided Instruction in basic skills mathematics allows students to learn the material at their own pace. This method of instruction uses software that is internet delivered and includes lecture, practice, and self-administered exams (NCTM, 2000). Computer technology is also used in “flipped classroom” instruction (Tucker, 2012). The term “flipped” instruction was popularized four years ago by two high school chemistry teachers in an attempt to reteach lessons to absent students (Tucker, 2012). The method involves teacher-created videos and interactive lessons that are accessed at home via a computer, before the students attend class (Tucker, 2012). This allows the teacher to use class-time for hands-on activities, solving problems, facilitating and guiding learners to better understand the concepts (Tucker, 2012).

Another teaching method where computer technology is also utilized is Distance Education. Distance Education is instruction where more than 50% of the classroom instructional time has been replaced with instruction via a distance education modality,
such as online or televised instruction. During online instruction, the students learn the material at their own pace using software that may be Internet delivered, that includes lecture, practice, and self-administered exams (Muir, 2001).

Another teaching method that encompasses reorganizing instruction that expedites the completion of academic requirements is Accelerated Instruction (The Center for Student Success, 2007). The definition of Accelerated Instruction is moving students through a course sequence in a shorter time frame (Bailey et al., 2010). Accelerated Instruction may help prepare some students of basic skills mathematics to acquire academic literacy and statistical reasoning for college level work by providing effective academic support (Bailey et al., 2010). This may facilitate the learning process and assist the students in understanding what they are learning, why they are learning it, where the learning process breaks down (Burris, Heubert, & Levin, 2004), and how the instructor can help them achieve their goals faster while maintaining a constructive, non-threatening learning environment (Bailey et al., 2010).

**Impact of Teachers’ Attitudes and Expectations on Student Learning and Success at the Community Colleges**

Teaching mathematics in a classroom is based in traditional forms of instruction. In this situation the teacher attempts to relay mathematical information to students (D’Ambrosio, 2006). But to reach all segments of the student population, especially the high number of Latino and African American students in community college basic skills mathematics courses, communication of the mathematical concepts must be linked to
engaging students in the learning process and getting the students to feel comfortable enough to participate in the classroom activities, discussions, and the learning process (Alliance for Excellent Education, 2011; McDuffie, 2004).

The “achievement gap” in California is an ongoing process and requires close attention, as well as openness to new ideas and successful practices (CDE, 2008). Although the higher education systems claim to be equitable and fair, underrepresented students continue to be marginalized as shown by the achievement gap (Nevarez & Wood, 2010). The achievement gap is “the academic performance difference between whites and minorities” (Carpenter, Ramirez, & Severn, 2006, p. 114). In California, the gap is defined as:

- the disparity between the academic performance of white students and other ethnic groups as well as that between English learners and native English speakers; socioeconomically disadvantaged and no disadvantaged students; and students with disabilities as compared with students without disabilities. (CDE, 2008, p. 11)

To close the “achievement gap” in higher education, teachers, administrators, and public officials must form partnerships with K-12 education system, to better serve all students especially the increasing numbers of underrepresented Latino and African American students at the community colleges (CDE, 2008).

**Teachers’ Expectations**

According to the Center for Student Success (2007), basic skills mathematics teachers’ goal is to decrease the mathematics anxiety level and create a learning environment that contributes to teaching students the necessary skills and concepts for
academic success. Teachers’ expectations, beliefs, and attitudes about their role as basic skills mathematics teachers involve that teachers and students interact during classroom instruction where the desired result is communicating to learn mathematics rather than to communicate mathematically (Ding et al., 2007).

It is through the Resiliency Theory lens that we see the significance of teachers’ attitudes toward students and their expectations from students that lead to producing successful results, especially their influence on students that come from low socio-economic backgrounds and students that are historically underrepresented (Phelan et al., 1998). Resilience theory is built on the premise that external protective environmental factors are made of three components: high expectations, caring relationships, and meaningful participation (Constantine, Benard, & Diaz, 1999). Students need to develop skills such as social competence, sense of self, and sense of meaning. The three external components and the skills evolve within the college environment, the home environment, in the community and among colleagues (Constantine et al., 1999). Studies show that the protective resiliency factors transcend ethnic and socio-economic status (Werner, 2005). Students’ culture, ethnicity, low-socio-economic status, may have an impact on increasing the challenges that students in basic skills mathematics courses face, due to marginalization or oppression (Dass-Brailsford, 2005; Frankel & Leonard, 2006; Murray & Naranjo, 2008).

Teachers’ expectations of basic skills mathematics students play a vital role in their academic success (Popham, 2005). Studies suggest that adult learners must be
challenged and teachers’ expectations from their students must be communicated clearly and often (Pintrich & Schunk, 2002; Rosenthal & Jacobson, 1968). Research indicates that basic skills mathematics students’ general attitudes toward the subject mathematics affect their learning (Popham, 2005). According to Good and Brophy (2000), motivation to learn is influenced by whether a student can “find academic activities meaningful and worthwhile to try to derive the intended academic benefits from them” (p. 205). Basic skills students’ interest and curiosity in mathematics must be challenged and new concepts that are moderately complex must be introduced. This often leads to students achieving positive results (Murphy & Alexander, 2000; Keller, 2008).

Expectations for high achievement must be evident in all teaching methods used in basic skills mathematics courses, assignments, discussions, and activities that learners perform to help them master the concepts presented (Glynn, Aultman, & Owens, 2005). Studies show that expectations influence learners’ and teachers’ behavior, learners’ and teachers’ attitudes, students’ motivation, and teachers’ feedback on students’ performance (Butler & Nisan, 1986; Lepper, 1988). Teachers’ expectations for their students can be influenced by students’ characteristics such as students’ ethnicity, language, race, and socioeconomic status (Bandura, 1997; Pajares, 2006).

Teachers in basic skills mathematics at the community colleges must articulate their expectations from students and give constructive feedback by focusing on students’ performance and not on their personal characteristics (Glynn et al., 2005). According to
Butler and Nisan (1986) high expectations can be effectively conveyed to students through critical feedback on the students’ performance.

Rosenthal and Jacobson (1968) define self-fulfilling prophecy as “the process by which a perceiver’s expectations about a person eventually lead that person to confirm those expectations” (p. 3). In a study conducted by Rosenthal and Jacobson (1968), they were able to show that teachers’ low expectations influenced their actions toward the students, which in turn impacted the students’ behavior and performance. The impact of teachers’ expectations on student performance is known as the Pygmalion effect (Rosenthal & Jacobson, 1968). It was named after a mythical king who built a statue and then made it come into life (Glynn et al., 2005).

In addition, some research suggests that students’ beliefs of their abilities to solve basic skills mathematics problems successfully, may impact their performance (Bandura, 1997; Pajares, 2006). Bandura (1997) defined self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3).

Simons, Covington, and Van Rheenen (1999) suggested that if faculty has low expectations of their students, then the students tend to perform at that level. Research suggests that teacher expectations may forecast changes in students’ success and behavior (AACC, 2012; Tauber, 1997). Glynn et al. (2005) suggested empirical evidence obtained by Tsui (2001) while comparing colleges that differed in their expectations of students, show that when faculty have low expectations of their students, they tend to give
unreliable feedback and praise students’ low performance. This in turn impacts the learners’ confidence, ability to stay motivated, and succeed (Glynn et al., 2005). Increasing expectations and performance in basic skills mathematics may require creating an environment of high expectations for student learning and success (Tsui, 2001).

**Teachers Attitudes**

Basic skills mathematics teachers’ must have the ability to make connections with their students and engage them in a variety of mathematics activities that improve the learning process and increase the positive outcomes (Tsui, 2001). Teachers’ attitudes toward their students and the mathematics subject must be positive. Faculty members of basic skills mathematics must be able to relate to their students and convey an attitude of caring and respect (Tsui, 2001). In 2002, Boylan noted that there is an association between negative attitude of basic skills mathematics teachers and low retention and completion rates of basic skills mathematics students. Teachers’ attitudes must be respectful and inviting to students’ input into the teaching and learning process (Boylan, 2002). Emphasis on “collaborative learning” as suggested by Tinto (1995) can increase student involvement and have a positive impact on the student learning process and student retention (Tinto, 1995).

Exploring the connection between teachers’ attitudes and students’ positive outcomes is an important issue in basic skills education at the community colleges. Attitudes are comprised of past and present experiences, but are not observed as such, but are shown in behavior (Oskamp & Schultz, 2004). Oskamp and Schultz (2004) stated,
“attitudes postulate a hidden process occurring within the individual, which we call his attitude: and it uses his attitude as an explanation of the relationship between stimulus events and the individual’s responses” (p. 15).

Basic skills mathematics instructors’ attitudes play a critical role in student success, and growth (Tsui, 2001). In 2004, Pryor and Pryor defined attitudes as beliefs that can be positive, negative, or neutral. The teachers’ attitudes must always be conducive to learning. Involving the students in the planning process of the learning objectives, the methods that will be used to achieve the objectives help increase the completion rates in basic skills mathematics program. Teachers with positive attitudes relate to students, curriculum, and matters of professionalism in a positive way. The role of the teacher as a facilitator and the role of the student as an active learner play a major role in the success of the students (ASCC, 2003).

Conclusion

Understanding the basic skills mathematics teachers’ perceptions regarding teaching methods, expectations of students, and attitudes, is an essential component to increasing students’ success and completion rates in higher education.

As the number of unprepared college students increase in the United States, the need for basic skills education in higher education increases. California Community College education system, the largest higher education system in the world, serving 2.6 million students, plays a vital role in educating many of the low income, minority, first-generation college students (PPIC, 2011). For many of these students, basic skills
education is a starting point. It is estimated that 70% of students entering California community colleges need basic skills English education, and 84% need basic skills mathematics courses (PPIC, 2011).

As the needs of the culturally diverse student population increase, meeting the needs will continue to be a challenge in higher education. But until basic skills education is perceived as an institutional priority and an institutional responsibility; it is naive to assume that the success or completion rates of the basic skills mathematics students will increase (Bahr, 2012).

The researcher hopes that this study created a better understanding of whether the instructors’ perceptions impact their teaching methods, their expectations of students, and their attitudes in the teaching and learning process and in the success of students who enter the community college needing basic skills mathematics instruction. This study aimed at contributing to the research base for defining teachers’ perceptions and their impact on student success.
Chapter 3

METHODOLOGY

Introduction

This study presented data collected from instructors that teach or have taught basic skills mathematics at the community college level. In this chapter, the researcher explained the methodology of this exploratory qualitative study including detailed information on the research design, the setting, the sampling methods, the data collection process, the data analysis, the measures taken to ensure reliability and validity, and actions taken to protect participants and their data.

Justification for Qualitative Research Design

Historically, anthropologists and sociologists have collected data in the field in an attempt to comprehend how people they studied made sense of their world. The history of qualitative research in education in the United States is complex (Patton, 1980, 2002). According to Luttrell (2010), Margaret Mead, a well-known anthropologist, made a significant application of anthropology to U.S. education. She was concerned with the role of teachers in fast changing educational institutions. She stated that teachers needed to study the changing contexts of their students through observations, interactions, and first hand involvement (Luttrell, 2010).

The researcher conducted a study and implemented a qualitative research design because this type of research can provide rich, in-depth descriptions about the participants “real life” experiences (Creswell, 2009). For example, Patton (2002) stated
that qualitative research has many important characteristics that allow the researcher to study real-world situations as they unfold; it is non-manipulative, non-controlling, with no predetermined constraints on the findings. Qualitative research has an emergent design flexibility that allows the researcher to adapt, to evade getting locked into rigid designs, and pursue new ways of discovery as they develop (Patton, 2002).

This study focused on a local setting which is a Northern California community college. The research questions are designed to produce an understanding of the participants’ perceptions regarding their teaching experiences in basic skills mathematics. While this study is limited to instructors from one institution, the outcome may provide similar colleges with relevant information that can improve the teaching and learning of basic skills mathematics. Furthermore, state policy-makers may be able to use this information to bring awareness to what basic skills mathematics instructors perceive as useful teaching methods, and subsequently allocate resources to professional development where these instructors may be able to share their experiences of what works best for them.

**Justification for Phenomenology**

According to Creswell (2009), the researcher in a phenomenological qualitative research design seeks to understand how people make sense of their world and the experiences they have. This method is appropriate for this qualitative study because the researcher is attempting to understand how everyday personal experiences of basic skills mathematics instructors are constituted from the participants’ perspective (Schwandt,
2007). According to Schram (2003), phenomenology is a study of “everyday life and social action” (p. 71). This method permitted the researcher to gain a deeper understanding of several individuals’ experiences within a phenomenon. The sample of participants in this study was small and purposeful, thus the qualitative approach was the most appropriate. The objective of this study was to discover the teaching methods, expectations, and attitudes of seven basic skills mathematics instructors so that their perceptions of their impact on student success could be identified and interpreted. It is important to note that the limitations of a phenomenological study, like most qualitative studies, are mainly linked to the generalizability of the findings. Nevertheless, because of the detailed descriptions that are provided, and the assumption that instructors at other community colleges have their own perceptions of their impact on student success in basic skills mathematics, this study may provide insights for others interested in the significance of the community college basic skills mathematics teachers’ perceptions and the success of the students in basic skills mathematics courses.

The researcher interacted with the participants solely for the purpose of conducting interviews to gather data. The researcher was not aware of any relationship with the participants prior to the study. The researcher investigated teachers’ perceptions regarding student learning and success in basic skills mathematics at the community college. The researcher interviewed seven basic skills mathematics faculty members from one Northern California community college. The following research questions guided the data collection and analysis for this study.
Research Questions

1. What are the basic skills mathematics instructors’ perceptions regarding teaching methods that are useful for facilitating student success in community college basic skills mathematics courses?
2. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ expectations on student success in their basic skills math courses?
3. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ attitudes on student success in their basic skills math courses?

Setting and Sample

The study took place at a Northern California Community College. For the purpose of this study the researcher chose the pseudonym “Majestic Cedar Community College” to refer to the community college where the interviews occurred. Majestic Cedar Community College is part of a long established district with a large student population. Majestic Cedar Community College serves extremely diverse student population where almost all ethnic groups are represented and mirrors the state diverse population. Between 40% and 50% of the student population is first-generation college students. Students come from wide-ranging economic backgrounds, but a substantial number of the students reported incomes considered below federal poverty guidelines: $23,550 or less for a family of four (U.S. Department of Health and Human Services,
A More than 50% of the student body is under the age of 25 and a majority of the student population at Majestic Cedar Community College attend day classes.

Participants’ Profiles

The researcher interviewed seven instructors who teach basic skills mathematics courses at Majestic Cedar Community College in Northern California. There are five female instructors and two male instructors. Their age span is 35-65. Each of the instructors possesses a bachelor degree in mathematics or statistics and a post-graduate degree either in Applied Mathematics or Applied Statistics. Within the group, the range of their teaching experience in basic skills mathematics at the community college level is from 10 years to 30 years. All of the instructors interviewed are full-time instructors.

Prior to the interviews, the researcher sent out an email invitation to instructors who are currently teaching basic skills mathematics or have taught basic skills mathematics in the last five years asking for their participation. The interviewees were provided a copy of the consent agreement that explained the details of the study, the use of the digital audio recorder to capture the participants’ responses, the voluntary nature of their participation, and the measures taken to protect their identity.

After the participants volunteered to participate, the researcher then set up a date and a time that were convenient for the participants in order to conduct one on one interviews. Before the interview began, the participants were asked if they had any questions or concerns regarding the study and then each signed the consent agreement (see Appendix A). The participants were assigned a number to ensure confidentiality of
their responses. The interviewees were also provided a copy of the interview questions (See Appendix B). While the participants in the study were limited to a small purposefully selected sample, the researcher believes that the data will offer the basis for recommendations.

For the purposes of this study, the researcher assigned pseudonyms to each individual in the group and Table 1 presents the pertinent demographics with the designated research appellations (see Table 1). The researcher uses the pseudonyms within the data interpretations, the theoretical applications, and for the overall analysis of the findings.

Participant one was a female of color who had 18 years of teaching experience in Arithmetic, Pre-Algebra, Elementary Algebra, and Intermediate Algebra at the community college level. She taught basic skills mathematics courses at two other community colleges and one private college. Participant one established a learning environment built on high expectations and increasing the organizational skills of the students. Her enthusiasm and sincere willingness to participate in the study was greatly appreciated.

Participant two was a male of color who had 11 years of teaching experience in Arithmetic, Pre-Algebra, Elementary Algebra, Intermediate Algebra, Calculus, and Statistics at the community college level. He taught basic skills mathematics courses at three other community colleges. Participant two established a caring learning environment with high expectations and “can do” attitude.
Participant three was a Caucasian female who had 30 years of teaching experience in Arithmetic, Pre-Algebra, Elementary Algebra, Intermediate Algebra, Geometry, Calculus, and Statistics at the community college and the university levels in California, Arizona, and Nevada. She taught basic skills mathematics courses at three other community colleges and two universities. Participant three has high expectations of the students. She established a nurturing learning environment with high motivation and “no mediocrity” attitude.

Participant four was a female of color who had 10 years of teaching experience in Arithmetic, Pre-Algebra, Elementary Algebra, Calculus, and Statistics at the community college level. She taught basic skills mathematics courses at one other community college. Participant four established a classroom environment rooted in structure and clear expectations.

Participant five was a male of color who had 16 years of teaching experience in Arithmetic, Pre-Algebra, Intermediate Algebra, Geometry, Pre-Calculus, and Calculus at the community college level. He taught basic skills mathematics courses at one other community college and one university. Participant five established an environment that enhances the students’ receptivity to learning and an approach to teaching that he describes as “holistic” approach.

Participant six was a female of color who had 12 years of teaching experience in Arithmetic, Pre-Algebra, Elementary Algebra, and Statistics at the community college level. She taught basic skills mathematics courses at one other community college.
Participant six established a learning environment that encourages and motivates the students to excel. Her commitment and passion, as she stated, is always for “the underdogs” and believes in “holistic” approach to teaching.

Participant seven was a Caucasian female who had 14 years of teaching experience in Arithmetic, Pre-Algebra, Elementary Algebra, and Statistics at the community college level. She taught basic skills mathematics courses at two other community colleges. Participant seven established a comfortable learning environment with high expectations. She believes that everybody can excel in mathematics if they “put their mind to it.”

The participants’ willingness and enthusiasm to participate in the study was greatly regarded and appreciated. They all shared the love of teaching and the commitment to improve the lives of the students of the basic skills mathematics courses and increase their chances for success in achieving their educational goals.
Table 1

**Participant Demographics**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Ethnic Background</th>
<th>Years of Teaching Experience</th>
<th>Type of Teaching Experience</th>
<th>Degrees Attained</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>Person of Color</td>
<td>18</td>
<td>Community College</td>
<td>B.A. Mathematics</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M.A. Applied Mathematics</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>Person of Color</td>
<td>11</td>
<td>Community College</td>
<td>B.A. Mathematics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M.A. Applied Mathematics</td>
</tr>
<tr>
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<td>30</td>
<td>Community College/University</td>
<td>B.A. Mathematics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M.A. Applied Statistics</td>
</tr>
<tr>
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<td>B.S. Mathematics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M.A. Applied Mathematics</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
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<td>Community College</td>
<td>B.A. Mathematics</td>
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<td></td>
<td>M.A. Applied Mathematics</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>M.A. Applied Mathematics</td>
</tr>
</tbody>
</table>

n=7 (5 females, 2 males)

**Data Collection**

This study was approved by the Institutional Review Board of California State University, Sacramento in fall 2012 as “Exempt” and contains no risk to the participants.

The study was also approved by the Institutional Review Board of Majestic Cedar Community College.

The researcher carried out purposeful sampling of subjects. The researcher chose purposeful sampling because the participants possess the specific type of experience.
needed to answer the research questions (Creswell, 2009). The selection of participants was based on their current status or previous status as instructors in basic skills mathematics program at the local community college.

According to Creswell (2009), in using purposeful sampling the researcher can select participants or sites that will best assist the researcher to understand the problem and answer the research questions in depth. In purposeful sampling the participants are selected because they offer useful manifestations of the phenomenon of interest, and they are “information rich” which can help to bring personal insights into the study (Patton, 2002).

The researcher followed an open-ended interview protocol as a method of collecting data, to provide consistency among the interviews conducted at the community college, and to ensure that the privacy and confidentiality of the participants were protected. Before the interviews, the researcher sent out an email invitation to instructors who are currently teaching basic skills mathematics or have taught basic skills mathematics in the last five years asking for their participation. The interviewees were provided a copy of the consent agreement that explained the details of the study, the use of the digital audio recorder to capture the participants’ responses, the voluntary nature of their participation, and the measures taken to protect their identity. After the participants volunteered to participate, the researcher then set up a date and a time that were convenient for the participants in order to conduct one-on-one interviews. Before the
interview began, the participants were asked if they had any questions or concerns regarding the study and then each signed the consent agreement.

Interviews were conducted using a semi-structured format with several main questions and several probe or follow-up questions as suggested by Creswell (2009). The interviews were conducted in a private office on the college campus. The interviews ranged from 45 minutes to 90 minutes in length. The open-ended interview questions helped to elicit rich responses and to discover community college mathematics instructors’ perceptions about the impact of their teaching methods, attitudes, and expectations on community college basic skills mathematics students’ learning and success.

The interviews were transcribed for data analysis. The researcher checked each interview for accuracy and completeness by listening to the recorded interviews and comparing them to the transcripts. Each interviewee was offered the opportunity to review their transcript to ensure their true perspective. However, none of the seven interviewees followed up on this offer. All interview audio files and hard copy transcripts were safely protected and secured in a locked filing cabinet at the researcher’s home, and will be carefully destroyed after the conclusion of the study.

Data Analysis

According to Merriam (2009), data analysis is the process that involves combining, condensing, and interpreting the findings of the data collected. Data analysis involves going back and forth between specific pieces of data and abstract concepts
(Merriam, 2009). The researcher analyzed the data following analysis techniques consistent with practices used in phenomenological research discussed in Moustakas (1994) and Creswell (2009). In this phenomenological research, data were analyzed in anticipation of finding all possible answers to the research questions in the study and through the discovery of language and themes that would emerge from the data (Creswell, 2009; Merriam, 2009). Data were then sorted and organized into categories, classes, and themes through activity process known as coding (Merriam, 2009). According to Merriam (2009) coding is a practice where the researcher makes comments, notes and observations while reading interview transcripts or any field notes or documents collected in the data-gathering phase that could be relevant to the research. As Creswell (2009) states, “Unquestionably, there is not one single way to analyze qualitative data, it is an eclectic process in which you try to make sense of the information” (p. 258).

For this study the researcher carefully read each transcript, line-by-line, several times. This allowed the researcher to get a general sense of the information and analyzed the data through the discovery of themes and common language that emerged during the coding. In order to identify and describe the patterns and themes from the perspective of the participants while reading the transcripts, the researcher wrote down notes in the margins, underlined and color coded relevant text to each of the research questions, and organized repeated words, phrases, and statements into categories of recurring patterns and themes (Creswell, 2009). The researcher identified every noteworthy statement
related to the study, combined and organized similarly coded statements into meaningful clusters of units, and developed narrative descriptions of the participants’ experiences and perceptions regarding the impact of their teaching methods, their expectations, and their attitudes on student success in basic skills mathematics courses. Quotes were interwoven into the narrative, using the participants’ own words from the transcripts, to explain the themes and sub-themes. According to Auerbach and Silverstein (2003), “the narrative is the culminating step that provides the bridge between the researcher’s concerns and the participant’s subjective experience” (p. 40).

**Data Validity and Reliability**

According to Clark and Creswell (2010), validity and reliability in qualitative research carry different meanings. As Merriam (2009) stated, “to a large extent, the validity and reliability of a study depend upon the ethics of the investigator” (p. 228). Qualitative reliability consists of ensuring that the researcher’s approaches are reliable and consistent (Creswell, 2009). Some of the reliability techniques are: a) checking the transcripts for transcription errors and b) ensuring that coding is consistent by using cross-checking or intercoder agreement (Creswell, 2009). According to Creswell (2009), “the intercoder agreement might be based on whether two or more coders agree on the codes used for the same passage in the text” (p. 191). To ensure reliability of the data collected the researcher reviewed each of the seven transcripts thoroughly against the recorded interviews and the researcher’s notes to ensure accuracy.
Validity is determining what you are measuring is clear and unbiased. Creswell (2009) recommends using multiple strategies to establish validity. Creswell There are eight primary strategies for establishing validity:

1. triangulation of data from different data sources,
2. clarification of potential researcher bias or reflectivity,
3. presentation of negative or discrepant information that runs counter to the themes,
4. peer review,
5. prolonged time in the field,
6. member checking,
7. use of rich thick description to convey the findings, and
8. use of an external auditor (Creswell, 2009, p. 191-193)

Three of the above validity strategies were employed in this study: a) triangulation, b) presentation of negative or discrepant information, and c) clarification of researcher bias or reflectivity.

**Triangulation**

According to Merriam (2009), triangulation is a strategy that increases the internal validity and credibility of a study. It is usually linked to land surveying or navigation where two or three measurement points allow for a convergence on a site (Merriam, 2009). Patton (2002) suggested four types of triangulation: the use of several methods,
several sources of data, several investigators, or several theories to confirm emerging findings.

This study used data triangulation to help understand the phenomenon (Creswell, 2009). The data collected through open-ended, semi-structured interviews with the basic skills mathematics teachers, as well as the reflective entries kept by the researcher, were employed and cross checked against the documentation in the review of the literature. Triangulation increases the communication between research and the real world (Plano-Clark & Creswell, 2010).

**Presentation of Negative or Discrepant Information**

According to Creswell (2009), “real life is composed of different perspectives that do not always coalesce, discussing contrary information adds to the credibility of an account” (p. 192). Information that was shared by multiple participants was emphasized and discussed. Quotes were retrieved from each of the interviewee’s transcript to demonstrate and support each of the themes. Nevertheless, information that contradicted the general perspective of the key themes was also incorporated. This ensured that the experiences of all the study participants were accurately reported.

**Clarification of Researcher Bias or Reflectivity**

The researcher is the main vehicle for data collection and interpretation in a qualitative study. It is important that the researcher is aware that he or she is not separate from the research, and examines his or her own past experiences, knowledge, and beliefs as they affect the shaping of the research (Creswell, 2009; Moustakas, 1994). To suspend
the researcher’s personal bias or prejudice, the researcher used “bracketing” by keeping a journal of ideas, personal thoughts, and reactions throughout the study (Creswell, 2009; Moustakas, 1994). The researcher kept journal entries and notes during and after each of the individual interviews. This activity helped the researcher in the development of the findings whereby the researcher used the data from the participants’ interviews as well as data from the journal entries and notes to organize the data analysis process (Drago-Severson, 2004).

The researcher had planned to use member checking also as a verification strategy. This is a technique whereby the researcher shares with each participant his/her own responses in order to assess and increase the accuracy and adequacy of the participant’s responses (Creswell, 2009; Merriam, 1998). The positive aspect of member checking is that it gives the participants a chance to correct errors and provides the opportunity to the participants to volunteer additional information (Creswell, 2009). The drawback of member checking is that members often strive to be perceived as good people, while researchers strive to be seen as good scholars and this may impact the stability of the study (Carlson, 2010). These two different goals may shape the findings and result in different ways of seeing and reacting to data (Angen, 2000). To ensure the stability of the study, the researcher explained to the participants the member checking process, what to expect if they decide to review the transcripts, how the narrative contributions will be used in the study, and assure them that their contributions are valid and very well respected (Carlson, 2010). Although each interviewee was offered the
opportunity to review their transcript to ensure their true perspective, none of the participants followed up on this offer.

A lens that the researcher also used to examine the data collected from the participants during the interviews was through the constructivist and resiliency theories discussed in the literature review. These acted as multiple sources of information that provided the researcher a lens through which she compared and cross-checked the data collected for analysis to ensure validity and credibility of the findings (Merriam, 2009).

**Protection of Participants**

The researcher took measures to protect the participants and their data. The researcher informed the participants that participation in the research is entirely voluntary; they could halt the interview at any time, opt out or decline to answer any question without consequence. The Institutional Review Board (IRB) at CSUS and at Majestic Cedar Community College approved the study prior to conducting the research. In order to ensure participants confidentiality and anonymity of the participants, the researcher used pseudonyms. All interview recorders and hard copy transcripts were safely protected and secured in a locked filing cabinet at the researcher’s home, and will carefully be destroyed after the conclusion of the study. Details of this process will be explained in the IRB application.
Chapter 4

FINDINGS

Introduction

This qualitative study was conducted for the purpose of understanding, describing, and gaining an insight into the perceptions of seven basic skills mathematics community college instructors regarding the teaching methods, expectations, and attitudes that impact students’ success in basic skills mathematics courses. It is important to note that this study employed a phenomenological research design to determine the essence of a single phenomenon (Plano-Clark & Creswell, 2010). The purpose of this study was to answer the three research questions posed in Chapter 1. The researcher findings, depicted within contextual occurrences and situated within thematic and theoretical frameworks throughout the following pages, shed some light on the mathematics instructors’ perceptions regarding the teaching methods, attitudes, and expectations that facilitate the success of basic skills math students at the community college level, and offer compelling insights for the field of higher education.

In answering the three research questions for this qualitative study, the researcher gathered the data through interviews with seven participants from the community college. The interviews were audio recorded and then transcribed for analysis. In addition, the researcher kept a personal journal to write her thoughts, observations, and reactions during and following each of the interviews to capture and clarify her experience with the participants. According to Drago-Severson (2004, p. 110), these writings are best
depicted as “free writes”, that are prompted by the personal experiences of the researcher, solely for the purpose of the study. In addition, the reflective writings helped the researcher in the analysis and triangulation of the findings of the study. Although the reflective writings were captured solely for the purpose of this study, the researcher may use these writings in future research, including professional development and training on basic skills mathematics instruction within higher education settings, and replicating the study to include a larger, more diverse population of faculty participants.

**Summary of Data Analysis**

The data were analyzed from each of the transcripts one-by-one starting with the first participant interviewed and ending with the last participant interviewed. As described in Chapter 3, the researcher read the transcripts carefully and analyzed the respondents' data, through the discovery of themes and common language that emerged during the coding process (Merriam, 2009). In order to identify and describe the patterns and themes from the perspective of the participants while reading the transcripts, the researcher wrote notes in the margins, underlined and color coded text relevant to each of the research questions, and organized repeated words, phrases, and statements into categories of recurring patterns and themes (Creswell, 2002; Creswell, 2009). The researcher then analyzed the statements and categorized these statements into sub-themes. The sub-themes were analyzed and ultimately grouped together into larger categories known as themes. The researcher used open and closed coding (Plano-Clark & Creswell, 2010).
According to Plano-Clark and Creswell, 2010, codes are labels that the researcher uses to describe the meaning of the data. During the open-coding process the researcher carefully read each transcript, line-by-line, several times. This allowed the researcher to get a general sense of the information through the discovery of sub-themes and common language that emerged during the coding. The closed-coding process was used to group the sub-themes into categories. The statements and the themes found in this study through open and closed coding became the basis for addressing the three research questions discussed in this chapter:

1. What are the basic skills mathematics instructors’ perceptions regarding the teaching methods that are most useful for facilitating student success in community college basic skills mathematics courses?

2. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ expectations on student success in their basic skills mathematics courses?

3. What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ attitudes on student success in their basic skills mathematics courses?

Each of the research questions, the themes, and sub-themes related to the questions are discussed in this chapter. Complete data analysis details were presented in Chapter 3.
Upon completion of the data analysis process, the researcher learned that the basic skills mathematics instructors in the study all perceived that their own approach to teaching, their expectations of the students, their interactions and building rapport with the students influence the learning and success of the students in basic skills mathematics courses. The remainder of this chapter discusses the data in relation to each research question.

**Characteristics of the Faculty Participants**

The participants for this study were seven basic skills mathematics community college instructors from a Northern California community college. The participants were purposefully selected by the researcher because the participants possess the specific type of experience needed to answer the research questions (Creswell, 2009). The selection of the seven participants was based on their current status or previous status as instructors in basic skills mathematics program at Majestic Cedar Community College. Although a detailed description of the participants’ profiles is discussed in Chapter 3, this section summarizes the faculty participants’ characteristics, as they relate to the study, obtained by the researcher during the interviews with the participants.

All of the participants in the study were full time faculty at the research site. All of the seven participants interviewed teach basic skills mathematics courses at Majestic Cedar Community College. The pertinent demographics of the target population were: There are five female instructors and two male instructors; all seven participants are within the age range of 35-65. Each of the instructors possesses a Bachelor of Arts or a
Bachelor of Science degree in mathematics or statistics and a post-graduate degree either in Applied Mathematics or Applied Statistics. Within the group, the range of their teaching experience in basic skills mathematics at the community college level is from ten years to 30 years. Although there is variation in the length of teaching experience among the participants, they all expressed support and respect for each other. Table 1 in Chapter 3 depicts the relevant demographic data.

All participants interviewed are currently teaching at least one of the basic skills mathematics courses, which include Arithmetic, Pre-Algebra, and Elementary Algebra. The Arithmetic and Pre-Algebra courses are considered non-degree applicable and non-transferable courses to a four-year college or university, while the Elementary Algebra course is degree-applicable as an elective course to Associate in Arts degree in the district, but is non-transferable course to a four-year college. In addition to the basic skills mathematics courses, all the participants have taught some or all of the following courses at other community colleges: Statistics, Intermediate and Advanced Algebra, Trigonometry, and Calculus. Details of each of the Participants Profile is discussed in Chapter 3 and summarized in Table 1 in Chapter 3.

All of the participants explained that their students are adult learners. Hence, according to Knowles (1980), the participants in the study would be considered adult educators. The role of the adult educators is to help and support the adult learners by providing guidance and creating an encouraging atmosphere (Benard, 2003). As noted by the participants’ and the findings of the data analyses, the characteristics of many of
the students who enroll in basic skills mathematics courses, as will be depicted in the next section, are varied and diverse, yet related in their need for guidance, motivation, and confidence building (Benard, 2004).

**Characteristics of the Students**

In this section, the researcher sheds light on the characteristics of the students in basic skills mathematics courses as described by the seven participants in this study. All of the participants stated that many of the students in their Arithmetic and Pre-Algebra classes are older students returning to college after having been out of school or the college environment for many years. All of the participants noted that some of the students in their basic skills mathematics courses are learning English as a Second Language (ESL). All of the participants described that students’ characteristics seemed to differ depending on the level of the basic skills mathematics course.

Participant five indicated that he has many returning older students and some ESL students in his Arithmetic courses, while the Pre-Algebra courses tend to have younger students:

- In the Arithmetic classes, what I’m noticing is I'm noticing a lot of returning students. I also notice a lot of ESL students, which are students where English is not their native language...
- An older student right meaning in your 40s that type of thing, that’s what I see in Arithmetic. As I get to the Pre-Algebra, it kind of shifts, so that you get students in the range from about 20s and 30s is what I get.
Participant one noted that she has returning students that have been out of high school for five years to 15 years:

- So, as I was saying in the Arithmetic course, I do see a larger percentage of students that are returning with a variety of age ranges, students being out of high school for gosh, five, ten, fifteen years or longer…

However, all participants discussed that in the Elementary Algebra courses many of the students are younger and have graduated from high school in the last four years. Two of the participants stated below:

- The higher classes, the elementary algebra, we tend to see a lot of students straight out of high school. So that tends to be more of the younger groups...

- Oh my goodness. In elementary algebra, I would say there's a large group that are recent and I'm going to define recent as within a year to about maybe three or four years from high school…

All of the participants explained that many of the students in their Arithmetic and Pre-Algebra courses come from low-income minority groups. Participant six shared her sentiments regarding arithmetic students and how their socio-economic background propels the need to provide them with the resources and support they lack at home and need to succeed in the coursework.
You are disadvantaged or low on the socioeconomic ladder, and you don't have that support from your family, maybe the neighborhood that you grew up in is all drug dealers… the purpose of the arithmetic is to really get their brains working again…

Participant two explained how his students in basic skills mathematics struggle financially:

- The majority of our students are under the poverty line. They struggle to buy books, they have to take the bus, and they have child care problems...

All of the participants discussed that many of the students in their Arithmetic and Pre-Algebra courses have high anxiety levels, and low self-confidence. As stated by three of the participants in the excerpts below:

- Because there's a great deal of anxiety that comes with taking a math course for many students. And so, coming in with low to no confidence is, I think, a real detriment to their being successful in the course. That anxiety keeps them from being able to process and learn very well.

- A lot of students go through this sort of math anxiety where they become afraid of math…

- In basic skills, I think since the anxiety level is high, I believe that students can be more sensitive, more fragile...
The researcher learned from the participants that many of the students in their basic skills mathematics courses are older, returning to college students, who are trying to improve their lives by acquiring the education and skills necessary to reach higher educational goals and succeed in life. The researcher also learned from the participants that they perceived many of the basic skills students in their classes are low-income, minority students, with high anxiety level, and low or no confidence. Some of the students come from diverse cultural backgrounds where the English language may not be their native language. Although these characteristics may be considered barriers to learning and success, they provide the study with valuable information about the struggles that students face and overcome because of their resiliency in the face of hardships (Benard, 2004). In the context of this study, the findings as presented in this section by comments from the participants, tie into the literature review of the resiliency theory that explains how caring and compassionate teachers that understand students’ characteristics and promote building supportive relationships, increase the learning and students success (Benard, 2003). In the next section, the researcher will discuss the findings, and establish a relationship between the findings, the researcher’s reflective writings, and the theory as discussed in the literature review. It is important to note that the researcher used the reflective writings to record observations and thoughts during and after each of the interviews either on or off the research site. The reflective writings helped the researcher in the interpretation of the findings.
Research Question #1: What are the basic skills mathematics instructors’ perceptions regarding the teaching methods that are most useful for facilitating student success in community college basic skills mathematics courses?

The purpose of this research question was to investigate the participants’ perceptions of what teaching methods help students succeed in basic skills mathematics courses. In analyzing the instructors’ responses, most of the discussions tended to be concentrated around Arithmetic and Pre-Algebra courses and students, and the following three major themes emerged: (1) Tailored Classroom Instruction, (2) Additional and Supplemental Instruction, and (3) Innovative and New Instruction. Each of these three major themes is reflected in the quotes from multiple participants within the study. Similarly, the researcher found recurring evidence of the sub-themes within the data. Table 2 presents the three major themes and their related sub-themes.
### Research Question #1

#### Theme 1: Tailored Classroom Instruction

- Collaborative Group Work
- Modeling by the Instructor
- Encourage Active Learning
- In-class Tutoring
- Contextualized Learning

#### Theme 2: Additional and Supplemental Instruction

- Supplemental Instruction/Tutoring outside the Classroom
- Learning Community/Mathematics Boot camp

#### Theme 3: Innovative and New Instruction

- Flipped Instruction
- Distance Education
- Accelerated Instruction

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Three major themes shown in **bold** typeface; sub-themes shown in *italics*

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**Tailored Classroom Instruction**

Throughout the data analysis process it became apparent that all the participants blended a variety of teaching methods modified to fit their students’ needs in each of the basic skills mathematics courses. The participants’ extensive experience in teaching basic mathematics skills courses, and the time they have spent teaching basic skills coursework at the community college level, give them the ability to tailor the instruction in their classrooms. *Major theme 1* emerged from the findings and researcher’s personal notes that were documented during and after the interviews, as a front runner that can answer...
research question one and includes the use of a variety of teaching methods other than the traditional lecture. *Major theme 1* also incorporates instruction about study skills as well as about Mathematics in what is normally called the “lecture” part of the course. *Major theme 1* is (1) Tailored classroom instruction incorporates enhanced “lecture” time. *Major theme 1* may include any or all of the following sub-themes: a) Collaborative group work, b) Modeling by the instructor, c) Encouraging active learning, d) In-class tutoring, and e) Contextualized learning. The participants indicated that the tailored classroom instruction results in improving study skills, organizational skills, and building confidence.

All of the participants stated that modifying the enhanced “lecture” time to include some or all of the above sub-themes give them the flexibility to decide how the material should be presented, what concepts should be emphasized and why, and it allows them to spend as much time as needed to explain and review the theory or problems on hand. According to Rousseau and Tate (2003) fundamental understanding of the important role basic skills mathematics faculty members play in the classroom in higher education may be lacking. This may lead to lack of appreciation for basic skills mathematics instructors’ teaching practices that may be modified to accommodate the adult learners in their classrooms (Ladson-Billings, 1995; Rousseau & Tate, 2003). Knowles (1980) suggested that adult learners are ready to learn when they feel the need to deal with “real-life situations” and the teacher has the obligation to provide an environment that can build on the learners’ prior knowledge and fit their needs to learn.
All of the participants noted that they enhance the “lecture” by forming collaborative groups of students or peer work groups where students support, help, and challenge each other, by having students solve mathematics problems, and utilizing one-on-one in-class tutoring or group tutoring during the class time. They allow time for collaboration and discussions among students to do class exercises and solve problems immediately after a new concept or idea is presented.

All of the participants perceived that high anxiety levels and fear of mathematics are some of the reasons why they feel that the basic skills mathematics students need to have enhanced “lecture” instruction that includes group activities, modeled and explained step-by-step to guide the students in the learning process. Participant three commented below:

- I think you have to kind of gauge the students as well as far as their level of anxiety level, frustration level… work in groups because it allows you more class time and collaborative learning…

Four of the participants stated that they model the activities in order to demonstrate to the students how these concepts may apply to their daily lives, their interactions with each other and the outside world.

- How to take good notes… So, I model that for them at the beginning, it's one of the requirements of the course…
Not just to teach the material, but to provide the material to the students in as diverse modalities as possible so that they get it from lecture, they get it from doing it themselves; they get it from doing it in small groups.

All of the instructors interviewed explained that they encouraged the students in their classrooms to take an active role in the learning process, by taking notes, asking questions when they are lost or confused, and participating in the discussions. According to Mayer (2004), for active learning to occur, the adult learners must take an active role in their own learning, should be “cognitively active” (p. 15) during the learning process and the teachers use “guided practice” (p. 15). During “guided discovery” the adult learner is guided through the concepts by the instructor (Mayer, 2004).

All of the participants emphasized that they guide their students through the process of taking notes, organizing their notes, their homework exercises, and their exams. One participant stated that she asks the students to organize the material in a binder and she checks the students’ binders periodically. Participant seven noted:

- I could say I want those binders today, turn them in between 2:00 and 3:00… I actually go through them and give them a grade based on the binder.

Participant four described how she utilizes contextualized learning, where she makes the discussions and the activities to solve the problems applicable to the real world and to the students’ daily lives. She explains how she incorporates group work and
hands-on activities as part of the daily learning process to show how mathematics is used in the real world:

- Especially Arithmetic class, I do a lot of group work. I do hands-on examples, ask students to bring in receipts and look at sales tax, and create problems using the receipts. I have students go to the board and present their work.

The participants added that they choose how to structure the time spent in class to maximize students’ understanding of the concepts. All of the instructors explained how they present the mathematical concepts in context relevant to the students’ lives and builds on their mathematical knowledge in a way that is most meaningful to the students. Instructors also encouraged the students to share their thoughts and ideas about what is presented.

All of the participants stated that having the freedom to tailor the learning environment in each classroom based on the student population in attendance is crucial for creating a comfortable learning environment and building student confidence.

They added that this flexibility allows the participants to determine how much time to spend on the mathematical concepts versus time spent on *study skills*, *organizational skills*, and *confidence building* in order to motivate the students, connect with the students on a personal level, and enhance the learning environment in the classroom. Participant six noted:
I really combine a lot of math study skills, a lot of awareness about what type of student they are, managing their time, being accountable and responsible, what it means to be prepared, engaged.

All of the participants expressed that effective study skills increase the chances of success for all students, but especially for many of the students that come from disadvantaged economic backgrounds and may not have been taught the study skills needed to succeed in school or college. Participants three and four described in the excerpts below:

- What you have is a culture of students who have spent 12 years in school with poor study skills... so, they're acculturated to this sense of this mediocrity...
- They need much more of how can I be a successful student in math... how can I be a successful student?

As seen in the above examples, all participants incorporate study skills as part of their mathematics instruction. They consider that study skills techniques play a major role in helping students in basic skills mathematic courses to be organized, learn good study habits, and manage their time. According to the participants in the study, teaching the students how to develop good study habits and organizational skills facilitates the learning process and motivates the students to work hard, persist, and succeed.
All of the participants discussed that the flexibility in the instruction contributes to building confidence in basic skills mathematics students. Two of the participants explained how having the students in Arithmetic and Pre-Algebra courses collaborate, work together, and help each other builds confidence in the students explaining the concepts or the problems and creates a comfortable learning environment for the students who are struggling and being helped by their peers. Participants four and six commented below:

- I have students work together. I found that when students help other students, students learn better.
- I do what I call a mini-lecture in basic ideas, concepts, and I let them work in groups to develop the concepts more… I have students gain confidence from each other.

In summary, these extracted findings confirm that students learn best when actively engaged in constructing their own knowledge through collaborative group work, modeling the mathematics activities, and active participation in the learning process (Bransford, Brown, & Cocking, 2006; Hsueh, 2005; Muir, 2001). The research findings support the use of tailored classroom instruction that includes contextualized learning in basic skills mathematics to make the discussions and the activities to solve mathematical problems more applicable to the real world (Boroch et al., 2010; Bruner, 1985). Tailoring classroom instruction to meet the students’ needs in basic skills mathematics courses enhances the students’ receptivity of the subject taught, and creates a supportive teaching
and learning environment (Bailey et al., 2010). The next section in this chapter will
discuss the second major theme under research question one that emerged from the data
analysis in this study.

**Additional and Supplemental Instruction**

*The Additional and Supplemental Instruction is major theme 2.* The additional
and supplemental instruction supports the sequence of basic skills mathematics courses.
It may include any or all of the following sub-themes: (a) Supplemental instruction and
tutoring outside the classroom, and (b) Learning community instruction that includes a
Mathematics Boot Camp. This major theme and its sub-themes are captured in Table 2.
All of the participants explained that they use *Additional and Supplemental Instruction* as
part of their daily teaching. The sequence of basic skills mathematics courses as
presented by Table 3.

Table 3

**Basic Skills Mathematics Course Sequence**

<table>
<thead>
<tr>
<th>Arithmetic</th>
<th>Pre-Algebra</th>
<th>Elementary Algebra</th>
</tr>
</thead>
</table>

*Arithmetic:* non-degree applicable; non-transferable to a four-year college

*Pre-Algebra:* non-degree applicable; non-transferable to a four-year college

*Elementary Algebra:* degree-applicable as an elective to Associate in Arts degree in
the district; non-transferable to a four-year college
All of the instructors encouraged the students to visit the mathematics center on campus to work with tutors and teachers, as well as seek additional help during office hours. The following statements from three of the participants illustrate these points:

- We have plenty of tutorial support on our campus; we’ve got a great math center.
- I think the college has done a lot in terms of providing support for our basic skills students and our basic math students.
- We've also have available individual tutoring as well on top of that supplemental instruction.

**Learning Community Instruction**

All of the instructors in this study were aware of *Learning Community Instruction*, but only two of the participants use this teaching method. According to Cross (1998), *learning community instruction* is built on the concept of collaborative learning. Two of the participants explained that the learning community helps the students in basic skills mathematics become more confident in solving mathematics problems, improves their interpersonal skills, and increases their communication skills. Cross (1998) defined learning communities as “groups of people engaged in intellectual interaction for the purpose of learning” (p. 4). In higher education, which includes community colleges, the term “Learning Community” is often used to refer to a group of students that take two or more courses together as a cohort (Tinto, 2003). Participant six in this study explained that the *Mathematics Learning Community* improves the students’
social and intellectual skills, thus helping them become engaged in the learning experience. According to Tinto (2003), by asking students to construct knowledge together, learning communities seek to involve students in ways that promote cognitive growth and collaborative work. The mathematics learning community in this study consists of:

- Summer mathematics program that includes *Mathematics Boot Camp* and study skills course.
- Academic/personal counseling.
- Fall mathematics course.
- Spring mathematics course.
- College success courses.
- Supplemental instruction.

Participant one stated that the *learning community instruction* for basic skills mathematics started about three years ago. The students in the mathematics learning community are part of a cohort model that commits to one summer semester and one year (fall and spring semesters). The two participants emphasized the importance of the *Mathematics Boot Camp* part of the Mathematics Learning Community.

**Mathematics Boot Camp**

To prepare students for the learning community, the students must be willing to participate in a summer course known as *Mathematics Boot Camp*. The *Mathematics Boot Camp* is an intensive four weeks course, designed to review specific mathematics
topics such as fractions, decimals, simple algebraic expressions, and solving linear equations. Although the *Mathematics Boot Camp* is open to all students who desire to improve their knowledge in mathematics, not all students in the *Mathematics Boot Camp* will be in the *Mathematics Learning Community*. This course is created to help students strengthen their mathematics knowledge in Arithmetic and Algebra. The *Mathematics Boot Camp* helps to improve study skills, lower mathematics anxiety, and build self-confidence. The *learning community instruction* is conducted in a mathematics center equipped with computers. The material for the course work is designed for each individual student based on their needs. As participant six stated:

- And then, they do what's called a *Mathematics Boot Camp* where we figure that if they could go back and fill in the gaps and the holes in their understanding that then they would be stronger math students altogether.

Participant six explained that the *Mathematics Boot Camp* is a four weeks course. All students assess to find out their mathematics skill level. Afterwards, every student starts with arithmetic and has to master all of the objectives of the course.

Both participants explained that the *Mathematics Boot Camp* course has its advantages. Tutors and teachers are available to the students the whole time to offer assistance, the results from the practice worksheets, quizzes and exams are immediate, and students’ confidence levels increase after completion of the *Mathematics Boot Camp*. Participant one noted that the program that the *Mathematics Boot Camp* uses is an
Internet-based program, with multiple choice practice questions in order to provide immediate feedback and results to the students.

She stated that the *Mathematics Boot Camp* is valuable for a variety of students. It builds the confidence of students that have not taken mathematics courses recently or lack confidence in their mathematics skills. An excerpt from participant one below:

- What I see at the end of the math boot camp, regardless of whether they assess into a higher level or not, they just go in with 200 percent more confidence… when I sit down and talk to each one of them… they accept it. I mean, they really understand it... and they're ready to do it.

Therefore, according to both participants, at the end of the *Mathematics Boot Camp*, regardless of whether the students assess into a higher level mathematics course or not, they leave the *Mathematics Boot Camp* with better understanding of the concepts, improved skills to solve mathematical problems, and more confidence because they grasp the basic concepts and know what it takes to succeed.

The data collected and analyzed in this study affirms that supplemental instruction and tutoring outside the classroom relies on the social learning theory that is explained by the work of Bandura and McClelland (1977) and stated that students learn through observation, interaction with peers and teachers that act as “role models” in motivating and helping the students learn and succeed in completing their coursework.

In addition, the participants’ commentary in this section, extracted from the research findings align with the concept of collaborative learning as suggested by Cross
(1998). In utilizing a learning community where support and structure of adult learners exist, an increase in students’ persistence and success is realized (Cross, 1998). In this study, the use of Computer-Aided instruction, in the context of a *Mathematics Boot Camp*, as part of a learning community acts as an effective method of instruction in basic skills mathematics, because it is used in a supported and structured environment, where guided practice and immediate feedback occurs. The next section discusses the findings as they reveal types of innovative and new instruction that were developed in recent years.

**Innovative and New Instruction**

This section identifies *major theme 3, Innovative and New Instruction* that emerged in recent years and are either not used by the participants because they perceive that these types of instructional methods will not be successful in basic skills mathematics education, or they have not had the opportunity to use them. Only one participant in the study explained how she is going to utilize one of the *Innovative and New Instruction* methods, known as *flipped instruction*, because she perceived that *flipped instruction* may work in her basic skills mathematics classroom. Table 2 captures The *Innovative and New Instruction* theme, which may include any or all of the following sub-themes: a) Flipped instruction, b) Distance education, and c) Accelerated instruction. The findings as they relate to each of the sub-themes will be discussed in the following three sections.
Flipped Instruction

*Flipped Instruction* is a method of instruction that was developed at the college level in recent years. In discussing the different teaching methods that the instructors perceived to help students succeed in basic skills mathematics courses, five of the participants stated that they never heard of and/or used *Flipped Instruction* but would be interested in learning about it. One of the participants heard about it from a colleague at another community college. The term “flipped” instruction was popularized four years ago by two high school chemistry teachers in an attempt to reteach lessons to absent students (Tucker, 2012). The method involves teacher-created videos and interactive lessons that are accessed at home via a computer, before the students attend class (Tucker, 2012). Participant three, with more than 20 years of experience in teaching basic skills mathematics, explained that she is in the process of implementing this type of instruction in her Pre-Algebra course because she perceives that this will improve the learning process, engage the students in collaborative learning, and reinforce the material with hands-on activities. The following is an excerpt of her statement explaining “flipped” instruction:

- So, the flipped classroom is instead of lecturing in the classroom and doing homework outside, the idea is they're going to watch the lectures outside of class... in class, they come in and work on their homework… where there's teacher help, where they're working in groups to help each
other, where they have all that collaborative piece, where I can reinforce with a hands on activity.

She added that the use of the computer to access pre-recorded videos from anywhere outside the classroom, allows the students to print the recordings and take notes while listening to the pre-recorded videos, as many times as they need to before coming to class. Participant three added, as noted below, that in conjunction with the flipped instruction she has the capability to use specialized software that allows for tracking students’ progress and identifying before the start of the class, which students are having difficulties and where the difficulties are, so she can have one-on-one discussions with the students and answer their questions:

- I have access internally to see where the mastery points, which students didn't get them, and which ones they didn't get... even before I walk in the classroom, I have a sense of where the difficulties are... they also have the opportunity to ask some more one-on-one questions and for me to reinforce what it was they didn't get from the audio tracks…

The classroom time becomes the place to work on mathematics concepts and problems, spend time helping struggling students, and creating groups of students that can work together, help each other to build a collaborative learning environment that leads to students’ mastery of the concepts and success.
Distance Education

_Distance Education_ is the second sub-theme that emerged in the study under _major theme 3, Innovative and New Instruction_. According to American Association of Community Colleges (2012), _Distance Education_ is instruction where more than 50% of the classroom instructional time has been replaced with instruction via a distance education modality, such as online or televised instruction. During online Instruction, the students learn the material at their own pace using software that may be Internet delivered, that includes lecture, practice, and self-administered exams (Muir, 2001). All of the participants perceived that _Distance Education_ may not work for the students of basic skills mathematics courses, since there is no teacher present to interact with the students, answer their questions and give immediate feedback.

As participant five with 14 years of teaching experience in basic skills mathematics courses stated:

- Students will tell you that I can’t go online and take a class because I don’t understand what’s going on; I have to be in there... if a student’s coming in taking the basic skills class, the student’s going to get more just being in the environment than doing something over the Internet.

Participant six explained why this method will not work for basic skills mathematics student population by saying that the students need to learn basic life skills, such as consistency, develop habits of coming to class on time every time, learn how to
manage their time to include studying and doing homework every day as part of a daily routine. She remarked:

- Well, for an Arithmetic class and a Pre-Algebra class, I don't believe online instruction is beneficial for them. They need to learn how to get up and come to class and develop a routine and consistency.

Two of the participants that teach the Mathematics Boot Camp course perceived that non-distance education aided by computer technology works in the Mathematics Boot Camp course because time spent working on a computer in the classroom does not replace instructional time with the faculty or the interaction time between the instructor and the student.

**Accelerated Instruction**

*Accelerated Instruction* is the third sub-theme that emerged in the study under major theme 3, Innovative and New Instruction. The definition of Accelerated Instruction is moving students through a course sequence in a shorter time frame (Bailey et al., 2010). By reorganizing instruction to expedite the completion of academic requirements, instructors can facilitate the learning process by recognizing that mastering the mathematics concepts may take time and commitment, but may provide students with a non-threatening constructive environment to learn and grow (Bailey et al., 2010). Four of the participants interviewed were aware of, but had never used, the accelerated teaching method. Two participants stated that they never heard of this method, and one participant stated that it will not work in basic skills mathematics courses unless you have
students with good study skills, self-motivation, and strong foundation in basic mathematics concepts. She commented:

- Accelerated, I would say will never work, but that's just my judgment of it. Accelerated would work with those students 20 years ago. Those are the students that already have the motivation, already have the study skills…

The researcher believes that students can progress rapidly through their basic skills mathematics coursework, if they are given the opportunity and the support services to acquire the academic skills to achieve their goals in a nurturing environment. Tailored classroom instruction supports the constructivist learning theory that students build on prior knowledge (Glasersfeld, 1989; Piaget, 1985). This leads into the next section in chapter 4, that discusses the findings related to teachers’ perceptions about the impact of their expectations on students’ success in their basic skills mathematics courses.

**Research Question #2:** What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ expectations on student success in their basic skills mathematics courses?

The second research question in the study focused on the instructors’ perceptions regarding the impact of instructors’ expectations on students’ success in basic skills mathematics courses. All of the participants perceived that setting high expectations helps the students persist in any learning environment. According to the participants of this study all students have the ability to succeed and build on their prior experiences if
they are willing to focus and participate in the learning process. The ability to build on existing knowledge ties into the constructivist learning theory that highlights the value of knowledge construction (Novak, 1977). Piaget, a distinguished philosopher and psychologist was convinced that people increase their intellectual development as they rebuild on ideas and concepts they learned at earlier stages in their lives with new ideas (Hsueh, 2005).

In analyzing the participants’ data, the researcher identified one main category or theme and three sub-themes that may help provide insights into the learning that occurs when students make a conscious effort to participate in the learning process. The major theme that emerged from the findings is: (1) Students willing and ready to participate in the learning process. The three sub-themes that followed from the data analysis were: (a) Students need to be attentive and actively engaged in the classroom, (b) Students need to take charge of their learning destiny and seek resources outside the classroom, and (c) Students need to follow classroom instructions and policies.

In the findings teachers’ perceived that having high expectations for students lead the students to take an “active” role in the teaching and learning process. Dewey (1916/2004) explained that a partnership exists between teacher and student. In this partnership, basic skills mathematics teachers direct the students to discover the meaning within the topic of mathematics (Dewey, 1916/2004). In addition, since many of the basic skills mathematics students are adult learners, the theoretical model focused on adult learning is known as andragogy (Knowles, 1980). Knowles (1980) defined
andragogy as “the art and science of helping adults learn” (p. 43). Knowles (1980) stated that teachers have the obligation to provide an environment to help the adult learners find out their “needs to know” (Knowles, 1980). Teachers must challenge their students’ interest and curiosity in the topic of mathematics (Murphy & Alexander, 2000). Providing an environment to learn and challenging adult learners’ interests in mathematics will engage the students in the problem solving activities and discussions and provide them with the motivation to willingly participate in the learning process (Bransford et al., 2006). The major theme and the correlative sub-themes are briefly presented in Table 4.

Table 4

Research Question #2

<table>
<thead>
<tr>
<th>Sub-Themes</th>
<th>P1</th>
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<th>P5</th>
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<tr>
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P=Participant

Major Theme: Students Willing to Participate in the Learning Process
Phrases/sub-themes mentioned – x; Phrases/sub-themes emphasized – xx; Phrases/sub-themes strongly emphasized – xxx
Students Willing to Participate in the Learning Process

Attentive/Actively Engaged in the Classroom

The participants of this study expect the students in basic skills mathematics courses to be attentive in class and actively engaged in the learning process through the discussions and the hands-on activities. According to all of the participants of this study, learning is not a passive process. The students of basic skill mathematics must be able to focus their full attention in the classroom, sit down for the duration of the class without getting distracted, listen attentively, and actively participate in the discussions and exercises. As participant one stated, she expects the students to focus in the classroom, and refrain from accessing their cellular phones and their iPod’s while in the classroom:

- They have to have some kind of self-discipline in terms of being able to sit down. I mean, they struggle many times being in the classroom for an hour and 15 minutes without accessing their technology.

Participant four mentioned that she expects all of the students in her basic skills mathematics classes to attend regularly:

- I expect students to come to class regularly and on time, pay attention, take notes and ask questions.

Participant seven commented that she expects all of the students to behave appropriately in the classroom and to be punctual in arriving to class and turning their assignments:
I expect them to behave well. I expect them to arrive on time, to turn in homework on time; late homework is penalized.

The participants have high expectations even for the students in basic skills mathematics courses who are struggling with irregular attendance, high anxiety, and low confidence. The participants commented that the students’ high anxiety and lack focus may be due to having many responsibilities outside the classroom that pull them in many directions. As two of the participants remarked in the excerpt below:

- Our students are bombarded with so many things. They are full time head of household and are taking classes. They are not focusing full time on their studies.

- In some cases the anxiety is so high, I’ve had many people come to my office and cry saying oh, math scares me. I try to work on not only their confidence level but comfort level.

As the excerpts above show, being a community college student for many of the older, returning students brings many challenges, including lack of family or community support structure. As participant six noted on unprepared older returning students:

- We have students that show up here in their 20s and 30s, even their 40s, that still don't know their multiplication table…

Nevertheless, actively engaging in the whole learning process, the discussions, and the group work are expectations that the participants ask from all of their students in
basic skills mathematics, even those that are faced with many hardships, have high anxiety, and/or low confidence. The participants noted that having high expectations for their basic skills mathematics students can influence the students’ behavior in the classroom, the students’ success in completing their course work, and the learning environment. Benard (2004) stated that it is through resiliency that students faced with hardships can succeed in achieving positive results. Teachers with high expectations can build caring relationships with struggling students that allow for engagement in teaching and learning and improve the chances of students’ persistence and success (Benard, 2003). According to the resiliency theory teachers can have an influence on minority students that come from low socio-economic backgrounds and/or students that are historically underrepresented (Phelan et al., 1998).

Similarly, teachers’ expectations for the basic skills mathematics students include taking charge of their own learning destiny. Analysis of the data provides an explanation of the second sub-theme in the following section.

**Students Take Charge of Learning Destiny/Seek Resources outside the Classroom**

This is the second sub-theme that emerged under the major theme: *Students willing to participate in the learning process*. All of the participants in the study perceived that it was their high expectations that encouraged the basic skills mathematics students to persist and succeed in the course work. Six of the participants stated that they expect all of the students to be committed to take charge of their own learning path and learn how to take on the college student role, become informed, learn how to navigate the
community college system, advocate for themselves, and seek help by utilizing available resources on campus. Participant seven stated:

- Being able to advocate for themselves when they know they need a little more assistance, they need help…

It is important to note that all of the participants in this study make their expectations clear to the basic skills mathematics students and provide support to the students in meeting these expectations. Resiliency theory emphasizes the need for establishing caring relationships in a nurturing environment as a motivator for student success (Constantine et al., 1999). The researcher learned from participant seven that expectations from the students include knowing when and where to ask for assistance. Participant seven explained in the interview that she informs the basic skills mathematics students about the available resources on campus and she supports and encourages them to visit the mathematics center, visit her office during office hours, so she can provide all the help that they may need to complete the course work successfully. Participant one commented that she expects students to take responsibility for their own studies, because that builds their confidence level.

In discussing the constructivist learning theory, Glasersfeld (1989) argued that when teachers act as facilitators and allow the students to take responsibility of their own learning, the students’ confidence in their ability to learn increases (Glasersfeld, 1989). She also added that although students’ attitudes do not align with instructors’
expectations in all cases, she is always available to support them in their learning endeavors. Participant one commented:

- There is a fine line between enabling and supporting… it's important that we don't enable… being responsible builds up their confidence and their success in math...

Three of the participants explained that some of the students in their Elementary Algebra courses, who graduated from high school recently, also have an attitude that does not align with teachers’ expectations of hard work and dedication. Two of the participants noted that some of these students come to class with a “mentality of entitlement” and feel that they should pass the course for attending the class, while the third participant explained that these students do not feel the need to work hard to earn a passing grade. The three participants commented:

- They have a mentality of entitlement. They are entitled to pass the class because they just showed up.
- I have a right to—I have a right to the job I want... they're not realizing that it's going to take hard work and it's going to take dedication.
- I have students that think that just because you come to class and sit through it the whole semester that you should be able to pass the class.

It is important to note that the analyses of the data pointed toward a commonality in the findings among the three participants in their discussion about students and
“entitlement”. All three participants perceived that the sense of “entitlement” was more common with recent high school graduates that are in Elementary Algebra and tend to be younger adults. Although this is not part of the literature review in chapter 2, the teachers’ perceptions about “entitlement” is aligned with a study conducted by Greenberger, Lessard, Chen, and Farruggia (2008). The purpose of the study was to investigate “academic entitlement” among college students (Greenberger et al., 2008). The empirical findings of Greenberger et al. (2008) explained that the sense of entitlement among 18-25 age groups of college students may be related to increased parental pressure, competition among peers and family members, and a heightened sense of achievement anxiety.

All of the participants commented on their expectations from students regarding regular attendance of classroom instruction because it allows the students to participate in the discussions, engage in problem solving activities, and be in charge of their own learning and success. Participant seven commented below:

- If you end up missing a week out of the month… and this becomes a repeat thing, not an occasional thing, you really don’t have the time to focus on school…

According to Tsui (2001), teachers must have the ability to provide direction and make connections with their students to encourage them to engage in seeking resources outside the classroom that improve the learning process. In the findings all of the participants noted that they expect the students in basic skills mathematics to seek
resources and spend time outside the classroom studying and doing homework. Three of the participants stated that students are expected to spend an average of two hours studying outside the classroom for every hour of classroom instruction. Participant seven stated in the interview:

- But our formula at community college, at least in math…two hours of work outside of class for each hour of class.

In summary, the researcher learned that all of the participants have high expectations for the students and provide encouragement and support to ensure students’ academic success. This is supported in the literature review provided on teachers’ expectations and academic growth. According to Glynn et al. (2005) teachers’ expectations for students that are focused on students’ performance and accompanied by constructive feedback can lead to increase in students’ motivation and achieving positive results.

This section summarizes the three main points of the second sub-theme that emerged from the findings and are supported by the literature review, as noted throughout the discussion, as follows: a) Building caring relationships with the students is a motivator for student learning, b) Teachers role facilitators allows the students in basic skills mathematics to take responsibility of their own learning and improves students’ confidence in their ability to learn, and c) Use of available resources outside the classroom. Hence, the encouragement and support that all of the participants in the study
are willing and ready to provide to all of the students create an environment that promotes student learning and persistence.

**Follow Classroom Instructions and Policies**

Adult learning is a continuous process that helps the adult learners’ progress from novices to experts and allows them to gain new knowledge and abilities and improve their intellectual development (Hsueh, 2005). According to Bransford et al. (2006) facilitating the knowledge transfer and enabling learners to build on what they have learned in the past in new settings are directly connected to the design and structure of the learning environment. In order to facilitate the learning process, the teachers have the duty to provide the students of basic skills mathematics with a classroom atmosphere rooted in structure, clear expectations, and supportive learning environment (Boylan, 2002). All of the participants commented that they provide clear instructions in the syllabus on their expectations of the students in the classroom, in terms of behavior and coursework. Participant seven noted the importance of reviewing the classroom policies:

- Normally, when I give a course syllabus, I spend time going through it and I do ask the students to participate in that discussion.

Two of the participants stated that they demonstrate the expected behaviors and their opposites in the classroom. According to Oskamp and Schultz (2004) students’ attitudes and behavior may have an impact on their performance. Participant six explained in the following excerpt how using the cellular phone during classroom time is an unacceptable behavior because it can disrupt the learning environment:
I'll come in and I'll let somebody call me on my phone and I'll talk on my phone in class while I'm teaching. The students, you could tell, are getting a little irritated…

This illustrates how participant six demonstrates to the students her expectations for acceptable and unacceptable classroom behavior in an effort to provide a comfortable but structured environment to help the students succeed. All of the participants explained, as one of their expectations in managing the classroom, that they discourage the use of the cellular phone during class time unless it is an emergency, because it disrupts the classroom environment. In addition, it can impact basic skills mathematics students’ abilities to focus in the classroom and stay motivated and engaged in the learning process. According to McCormack (1997), the ability of instructors to manage students’ behavior in the classroom in a constructive approach impacts the effectiveness of teaching, learning, and student achievement.

All of the participants explained that they expect the students to respect and follow all the institution/classroom rules, and show respect toward the teacher and other students. Charles (1999) believes that practicing mutual respect motivates students to behave constructively. Participant two explained his philosophy on respect:

I want my students to behave in a manner that is respectful towards me and towards their classmates. I don’t tolerate any foul language, any condescending tones, any looks, gestures, body language.
Part of the learning process is creating a comfortable environment that allows the learners to participate in the classroom activities and discussions (McDuffie, 2004). All participants shared that developing effective organizational skills is an expectation that they perceive is crucial for student success because it engages the students and builds a positive caring environment. Participant three and participant seven commented on how they help their students become organized:

- One of the things we talk about is organization…students are given an opportunity to learn to be organized and submit homework in a proper way.

- I try to teach them organization skills… I require a binder. I need you to have a divider in there and you're going to put your notes in one section and your homework in the other section.

Pintrich and Schunk (2002) suggest that adult learners must be challenged and teachers’ expectations from their students must be communicated clearly and often. All of the participants in this study perceive that their high expectations and nurturing support play a role in the learning process and success of the students in basic skill mathematics. For students to succeed they must be motivated to actively engage in the classroom discussions and problem solving activities in basic skills mathematics courses (Glynn et al., 2005). It is through the resiliency lens we see the value of teachers’ high expectations for students that lead to producing successful results (Phelan et al., 1998). This is especially apparent in their influence on students that come from low socio-
economic backgrounds and students that are historically underrepresented (Phelan et al., 1998).

A study conducted by Rosenthal and Jacobson (1968) showed those teachers’ low expectations for historically underrepresented students influenced their actions toward the students, which in turn impacted the students’ behavior and performance. Hence, having high expectations for all students motivates the students to be resilient and overcome many challenges and hardships (Popham, 2005). Constantine et al. (1999) have articulated that resilience theory is built on three external protective environmental factors: high expectations, caring relationships, and meaningful participation that transcend ethnic and socio-economic status. The findings in this study show that the participants employ all three factors in their daily interactions with the students as follows: (a) they have high expectations from their students and their abilities to succeed in basic skills mathematics, (b) they provide a caring environment built on mutual respect and compassion, and (c) they encourage engagement in the discussions and use a variety of mathematics activities to enhance the learning process and increase students’ success.

Having high expectations from adult learners can encourage individual growth and promote learning when presented in a supportive environment (Tsui, 2001). The researcher concludes that all the participants in the study “truly believe” that their basic skills mathematics students have the ability to succeed in basic skills mathematics if provided with the appropriate tools and nurturing environment that enhances their
abilities to grow and learn. The researcher believes that the following quote from one of the participants echoes a powerful sentiment shared by all:

| I really do believe everybody could do math, and if I didn't believe that,  
| I wouldn't be teaching. |

**Research Question #3:** What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ attitudes on student success in their basic skills mathematics courses?

The third research question in the study focused on the instructors’ perceptions regarding the impact of teachers’ attitudes on students’ success in basic skills mathematics courses. All of the participants perceived that their positive outlook and their caring relationships with the students can encourage the students to persist in their coursework. According to Ding et al. (2007), teachers’ attitudes about their role as basic skills mathematics teachers can impact students’ behavior and attitudes toward learning. In an effort to gain insight into the significance of creating a positive rapport between the teachers and the students in college, Buskist and Saville (2001) conducted a study that led them to conclude that creating a positive rapport enhances the teaching and learning environment and builds trust. The following list provides elements that can impact students’ behavior, their motivation to learn, their persistence, and their receptivity to the subject being taught (Buskist & Saville, 2001):
Teachers’ have positive and caring attitudes toward their students inside and outside the classroom.

Teachers understand the students’ backgrounds and show genuine interest in their students’ lives.

Teachers communicate with their students clearly and honestly.

Teachers are approachable.

Teachers encourage their students to participate in classroom discussions.

Boylan (2002) noted that there is an association between negative attitudes of basic skills mathematics teachers and low retention and completion rates of basic skills mathematics students. When teachers have positive attitudes, they strive to create a “collaborative learning” environment in the classroom (Tinto, 1995). A “collaborative learning” environment can increase students’ participation in the learning process, hence impact student retention (Tinto, 1995).

In analyzing the data collected, the researcher identified one major category or theme and three sub-themes. The major theme is: (1) Connecting and building positive rapport with the students, while the three sub-themes are: a) Understanding the students’ backgrounds, b) Communicating in open, clear, and honest ways, and c) Building trust. Table 5 presents the major theme and the correlated sub-themes that emerged from the findings. All of the teachers’ in this study perceived that their attitudes in the classroom and outside the classroom can significantly impact students’ motivation for learning, students’ persistence in the course work, and students’ behavior.
Table 5

Research Question #3

<table>
<thead>
<tr>
<th>Sub-Themes</th>
<th>P1</th>
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<th>P3</th>
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<th>P6</th>
<th>P7</th>
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<tr>
<td>Building Trust</td>
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P=Participant

Major Theme: Connecting and Building Positive Rapport with the Students

Phrases/sub-themes mentioned – x; Phrases/sub-themes emphasized – xx; Phrases/sub-themes strongly emphasized – xxx

Connecting and Building Positive Rapport with the Students

Connecting and building positive rapport with the basic skills mathematics students contribute to the learning and behavior of students in the classroom. All of the participants perceived that building a positive relationship with the students helps the students stay motivated and take an active role in their own learning. Buskist and Saville (2001) suggested that effective teachers know how to build alliances with the students that improves the teaching and learning process. Central to building alliances between teachers and students is trust (Buskist & Saville, 2001). Trust as shared by the participants is built on mutual respect, the teachers’ abilities to connect with the students through personal interactions, communication, and being available and approachable. The combination of these actions can influence students’ behavior, students’ motivation,
and can enhance students’ responsiveness to the subject being taught (Buskist & Saville, 2001).

**Understanding the Students’ Backgrounds**

Students’ culture and backgrounds play an important role in their persistence and success. The participants in this study serve an extremely diverse population in their basic skills mathematics classrooms. Therefore, it is essential that the basic skills mathematics instructors understand the students’ backgrounds and cultures so as to provide them with mathematics problem solving activities and discussions that build on students’ existing knowledge and cultural experiences (Popham, 2005). Adult learning, as suggested by Good and Brophy (2000), involves keeping the students motivated to learn by providing the appropriate environment. Motivation to learn is influenced by whether the student can “find academic activities meaningful and worthwhile to try to derive the intended academic benefits from them” (Good & Brophy, 2000, p. 205).

According to Ladson-Billings (1995) cultural relevant pedagogy suggests that teachers can help students keep their cultural identity, understand themselves and their peers, develop social interactions, while learning and succeeding in their coursework. Participant six noted that taking the time to listen to the students and their struggles with the mathematics subject is instrumental in building caring relationships. Participant six noted:

- I always start off with having them write for me a mathematical autobiography. I ask them to go through their math history…
Participant seven explained how taking the time to discuss with the students their mathematical background, their educational goals, and how they feel about the subject of mathematics is vital for improving students’ learning and enjoyment of the college experience and mathematics course work. Participant seven stated:

- I ask them to talk to me about if they liked math… the reason for them coming to school… how this math class is an important step for where they are planning to go, whatever their educational goals and dreams are.

All of the participants perceived that many of the students in their classes are unprepared for college course work and struggle with the mathematics subject, so providing them with a nurturing environment that enhances the learning in basic skills mathematics courses can help their students to stay positive and overcome the obstacles to their learning. Benard (2004) stated that individuals, who overcome hardships and challenges through self-efficacy, are resilient. Self-efficacy is the measure of one’s own abilities to complete tasks in the face of life stressors, reach goals, and succeed (Werner, 2005).

All of the participants in the study stated that many of the students in their basic skills mathematics courses are older students, who come from low socio-economic backgrounds and/or from historically underrepresented populations, who have been out of school for a number of years. The students may have forgotten what they have learned or they may have never acquired the skills. Participant three noted the importance of explaining to students the value of learning mathematics:
I explain to them a lot in my basic skills classes why this math is important... how they might’ve used or might be using math in their current life.

All of the participants indicated that some of their students in basic skills mathematics courses are not native English speakers, so it is important to understand the cultural and linguistic challenges they face and how to help them overcome the challenges and succeed. Participant five noted that having instructors who can speak the students’ native languages may help the students persist in basic skills mathematics:

I also notice a lot of ESL students, which are students where English is not their native language... we need to have instructors who speak different languages...

NCTM (2000), in their standards for mathematics teaching document, *Principles and Standards for School Mathematics*, emphasized that culture plays an important role in mathematics instruction. It states, “because students learn by connecting new ideas to prior knowledge, teachers must understand what their students already know” (p. 18). Basic skills mathematics teachers must be aware and open to understand the different cultures around them in order to meet the students’ educational and emotional needs (Demmert & Towner, 2003). Many of the students in basic skills mathematics classes, come from a variety of different cultures. This may suggest that activities and discussions that applicable to the students’ ethnicities and culture and encourage students’
engagement can prove to be beneficial to establishing an inclusive environment (Tsui, 2001).

A participant explains that, although a connection may occur between a teacher and some of the students because the teacher is the same gender or ethnic background as some of the students in basic skills mathematics, this does not automatically translate to success for those students. The students need to feel that the teachers genuinely care about them and about their success; otherwise the students may see no reason to invest in themselves and their education. Tsui (2001) suggested that to make sincere and positive connection with the students, the mathematics instructors’ attitudes toward the mathematics subject and all of the students, must be positive. Teachers’ attitudes must be respectful and inviting to students’ input into the teaching and learning process (Boylan, 2002).

One participant noted that sharing his personal educational journey with the students allows him to develop a positive rapport that promotes encouragement and helps the students to persist in their learning. Participant two explained that as a Hispanic male, he was expected to get a job after high school and was discouraged from attending college in the Hispanic community where he grew up. Participant two noted:

- That was a hard thing, being a male in the Hispanic community, because you were expected to get a job and be the bread winner.

Participant five explained that students’ cultures play an important role in how they perceive basic skills mathematics education. Participant five noted:
…there’s about 75 percent non-white students. It just depends on how education was viewed in your culture… breaking free of some of those stereotypes…it is really challenging.

Building an inclusive environment is key in helping adult learners increase their social, emotional, and intellectual skills (Demmert, 2001). In understanding the different cultures around them, teachers can contextualize the discussions and the mathematics problem solving activities in the classroom to meet students’ educational needs, enhance their learning experiences, and eventually increase their chances of success (Glynn et al., 2005; Johnson, 2001).

**Communicating in Open, Clear, and Honest Ways**

This is the second sub-theme that emerged from the findings under *major theme 1: Connecting and Building Positive Rapport with the Students*. All of the instructors described that being clear and honest in communicating one’s expectations to the students is important for contributing to the development of a positive rapport and motivating the students. Meyers (2009) suggested that when teachers communicate with the students clearly and with respect, they build positive rapport that impacts students’ behavior and enhances their educational experience. The participants in this study stated that clear and respectful communication is essential for building a positive relationship with the students. The participants explained during the interviews that they spend the first class meeting reviewing the syllabus, explaining the course policies and rules about appropriate behavior inside and outside of the classroom, and why these policies are
chosen. Pintrich and Schunk (2002) suggested that adult learners must be challenged and teachers must communicate with the students clearly and often. The participants emphasized the importance of keeping an open line of communication with the basic skills mathematics students to ensure students’ progress in the coursework. Participant one noted:

- I think that there are two things that are required of the teacher. One is that their expectations are clearly communicated… and it's explaining to the students why you made the decisions you did…

All of the participants spend time communicating to the students the importance of dedicating time outside the classroom to do homework and study, so as to reinforce the material learned in class and prepare for the following class. In speaking about devoting time outside the classroom, participant one remarks:

- We tell them two hours of work outside of class for each hour of class… spending ten hours a week on homework, going through lecture notes, whatever it is to understand and retain the materials and the concepts.

From the data analysis of the transcripts of the interviewees for this study, evidence is revealed that all of the instructors interviewed value the importance of clear, honest, and respectful communication, in motivating students to engage in the learning process. Participant three commented that the ability to communicate clearly allows the students to build confidence.
When a student has to communicate what they're learning to others, that's valuable for them... it reinforces their own learning and confidence...

There is a significant value to the learning process when teachers communicate with the students and reach out to them on a personal level. This helps build a positive, lasting relationship and creates a relaxed inclusive environment where students enjoy attending class and learning. Buskist and Saville (2001) suggested that clear communication with respectful listening help in developing positive rapport and improving students’ attitudes toward learning. According to Meyers (2009) an increase in positive instructor-student rapport leads to an improvement in students’ attendance and an increase in motivation for learning. Resiliency theory suggests that caring relationships built on trust, which is discussed in the next section, allow students and teachers to engage in teaching and learning that will increase the chances of student success (Werner, 2005).

**Building Trust**

Building a bridge of trust is vital for making basic skills mathematics students feel “at ease.” Through the coding of the data, the researcher discovered that the sub-theme *Building Trust* that emerged from the participants’ responses is an essential element to enhancing the students’ motivation and receptivity to the material being taught. Consider this example of a participant sharing a personal experience or insight with the students of basic skills mathematics course:
I like to bring a little humor in… to kind of break the ice. I also like to share my story in terms of my pathway through mathematics, which hasn't always been stellar… it's something that they're almost relieved to know that their math teacher had to retake math courses as well.

The researcher detected from the data analysis that being trustworthy means being “authentic,” forthcoming, and nurturing. This means coming across as “real,” showing interest in the students, and trust in their abilities. This caring and trusting attitude will inspire the students to work hard, as seen in participant five’s remarks:

When students see that you have the attitude and the willingness, and you’re taking an interest, they’re willing to work harder at something…

According to Brookfield (1990), when teachers are perceived by students as trustworthy, honest, and caring, the teachers become partners in the learning process because they have students’ interests at heart and desire to see the students succeed. All of the participants stated that being sensitive, approachable, and accessible to the students facilitates mutual respect and builds a trusting comfortable learning environment for the students. Study participant four commented on being approachable:

That’s because whether you're approachable or not can make the difference whether the student is coming to your office hours…

Creating a collaborative and nurturing environment is important for building trust. Students want to know that teachers strive to help them learn (Brookfield, 1990). To
build trust with adult learners teachers must be responsive to students’ needs and interests, and recognize students’ academic abilities (Brookfield, 1990). Brookfield (1990) suggests that getting to know the students on a “personal” level is essential for building positive relationships and increasing trust. For one of the participants in the study this meant knowing students’ names in all of her basic skills mathematics courses. As she commented in the interview:

- But to me, that's vital. You want to think somebody, Joe or Sandy rather than the person that sits in the fourth row or the last seat… I really make it a point to know every student's name.

Adult learners are more willing to engage in the classroom if they perceive that the instructors are caring and trustworthy (Meyers, 2009). The researcher believes that the participants in this study invest time and effort to develop positive, trusting relationships that motivate their students to learn and succeed, as it has been revealed by the data collected.

**Conclusion**

The findings presented in this chapter show a wide range of data related to teachers’ perceptions. Participants’ interviews were synthesized to provide a description of teachers’ perceptions regarding the impact of their teaching methods, their expectations, and their attitudes on student success in their basic skills mathematics courses. The data analysis process led to the discovery that there is not one isolated factor that promotes students’ learning and success, but rather it is a combination of the
participants’ teaching methods, expectations, and attitudes in alignment with positive nurturing environment, conducive to teaching and learning. Chapter 5 provides a summary of the findings, recommendations, implications for practice, policy, and future research.
Chapter 5

SUMMARY AND CONCLUSIONS

Introduction

The purpose of this study was to examine and gather data about mathematics instructors’ perceptions regarding teaching methods, attitudes, and expectations that facilitate the success of basic skills math students at the community colleges. The researcher sought to understand what basic skills mathematics instructors perceive as useful for students to succeed in basic skills mathematics because it provides insight into the daily process of teaching and learning. The participants in this study were asked to share experiences from their point of view as contributing and facilitating factors to student success in basic skills mathematics.

This study is significant because there is a gap in the literature when it comes to the instructors’ perceptions on which teaching methods are most useful for students’ success in basic skills mathematics coursework and how basic skills mathematics instructors perceive their own expectations and attitudes as contributors to students’ success. This study which was developed using a phenomenological qualitative research design was in providing data identifying effective factors that instructors perceived as having impact in promoting students’ learning and success (Creswell, 2009).

In the preceding chapter, the presentation and analysis of data gathered were reported. Chapter 5 consists of a summary of key findings, discussions and conclusions, limitations, implications, and recommendations.
Summary of Key Findings

This study proposed three research questions. To answer these inquiries, phenomenological qualitative research design was used. Schram (2003) explains that phenomenology is a study of “everyday life and social action” (p. 71). According to the data collected through interviews with the seven participants, emergent themes included tailored classroom instruction, innovative and new instruction, students’ participation in the learning process, and connecting and building positive rapport with the students. In the next three sections of chapter 5, the researcher highlights the findings and presents them in relationship to the research questions the study posed.

**Research Question #1:** What are the basic skills mathematics instructors’ perceptions regarding the teaching methods that are most useful for facilitating student success in community college basic skills mathematics courses?

**Perceptions on Teaching Methods**

The data gathered during this study with seven basic skills mathematics instructors revealed teachers’ perceptions regarding their teaching methods impact students’ success. All of the participants perceived that the flexibility they have in constructing their teaching methods, to meet the diverse population of adult learners in basic skills mathematics, enhances the learning environment. The instructors interviewed encouraged active learning through collaborative group work and active participation. Mayer (2004) explained for active learning to transpire, the adult learners must take an active role in the learning process and be “cognitively active” (Mayer, 2004, p. 15).
All of the participants in this study encouraged their students to visit the mathematics learning center for supplemental instruction and tutoring. Bandura and McClelland (1977) stated that students learn through observation, interaction with peers that are more reliable and act as “role models” in motivating and helping the students understand the concepts and successfully complete their coursework.

The findings from the study uncovered that the participants believe that contextualizing learning motivates students to participate. By designing classroom discussions and mathematics problem solving activities relevant to the real world, students are encouraged to take an active role in the teaching and learning process (Piaget, 1985). Data also revealed that the Mathematics Learning Community, which includes Mathematics Boot Camp, increased students’ understanding of the basic mathematics concepts, improved their study skills, and built their confidence level.

**Research Question #2:** What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ expectations on student success in their basic skills mathematics courses?

**Perceptions on Expectations**

The findings revealed that all of the participants perceived that, having high expectations and helping their basic skills mathematics students achieve those expectations, motivates the students to persist in their own learning. This aligns with Benard’s (2003) findings that teachers’ high expectations and building relationships with
the students allow for increases in students’ motivation and engagement in the learning process.

The participants’ expectations for the students included active participation in classroom discussions and collaboration with peers in mathematics problem solving exercises. The participants’ perceived that guiding the adult learners in the learning process through interactions and dialogues with peers enable the students to build on their prior knowledge and experiences. Constructivist teaching (Dewey, 1916/2004) is based on the idea that learning transpires when people are actively engaged in the learning process and knowledge construction. Dewey (1916/2004) asserts that the teacher is a partner in the learning process who guides the students to discover the meaning within the topic studied.

Statements from the participants in this study explaining that their expectations for basic skills mathematics students go hand in hand with providing support and encouragement. Glynn et al. (2005) suggested teachers’ expectations for students that are focused on students’ performance and accompanied by constructive feedback in a caring environment can lead to higher motivation and positive outcomes.

The researcher, whose native tongue is not English, believes that expectations for all students, especially students from diverse cultures or where English is not the native language, must be communicated clearly and often. All of the faculty participants in this study stated that they communicate their expectations, in writing and verbally, often throughout the semester. This is consistent with Pintrich’s and Schunk’s (2002) study
that suggested that adult learners must be challenged and teachers’ expectations from their students must be communicated clearly and often.

**Research Question #3:** What are basic skills mathematics instructors’ perceptions regarding the impact of teachers’ attitudes on student success in their basic skills mathematics courses?

**Perceptions on Attitudes**

Research data from this qualitative study points out that connecting and building positive rapport with the basic skills mathematics students contribute to the learning and behavior of students in the classroom. The teachers’ in this study perceived that their attitudes impact students’ behavior and success in basic skills mathematics. This is aligned with Ding’s et al. (2007) suggestion that teachers’ attitudes can impact students’ behavior and attitudes. Statements among all of the participants produced data on the benefits of having positive attitudes for student learning.

All of the participants commented that positive attitudes and mutual respect can lead to students’ persistence and completion of the coursework. The data from the interviews with the participants is consistent with Boylan’s (2002) suggestion that there is an association between negative attitudes of basic skills mathematics teachers and low retention and completion rates of basic skills mathematics students. Boylan (2002) emphasized that in addition to having positive attitudes teachers’ attitudes must be respectful and inviting to students’ input.
All of the participants perceived that building positive relationships is vital for helping the students stay motivated. This is consistent with Buskist and Saville (2001) who suggested that creating a positive rapport enhances the teaching and learning environment and builds trust between the teachers and the students. Brookfield (1990) suggested that getting to know the students on a “personal” level is essential for building positive relationships and increasing trust. Interestingly, the instructors in this study discussed that they consider that being approachable, accessible, and sensitive to students’ needs facilitates mutual respect and builds a nurturing environment conducive to learning.

Six of the participants in the study commented that as students they struggled themselves with mathematics. The participants explained that perhaps it is their struggle as students with the mathematics subject that gives them the conviction to create a learning environment where everyone could learn mathematics no matter what a person’s background or education. The researcher truly believes that learning mathematics does not happen overnight, it requires practicing and communicating the concepts, hard work and perseverance. The researcher believes that the following quote from one of the participants echoes a powerful sentiment shared by all participants about learning the language of mathematics:

- … because math is a language. How do you learn the language? You’ve got to practice it; you’ve got to communicate it.
Discussions and Conclusions

Basic Skills Mathematics Instructors Need more than Mathematics Content Knowledge to Meet the Needs of their Students.

The major findings of this study support a significant number of the research studies reviewed in chapter 2. Most valuable was that the participants believe that students’ success is possible because the participants in the study have the flexibility to utilize diverse teaching methods tailored to meet students’ needs. Teachers need to have more than mathematics content knowledge. Each of the participants’ expressed that they would not have been able to teach effectively without having the ability to tailor their instruction to the student population in their basic skills mathematics courses. As discussed in chapter 4, many of the students in basic skills mathematics classes come from low socio-economic backgrounds, with high anxiety, and low or no confidence. Some of the students come from diverse cultural backgrounds where the English language may not be their native language. Although these characteristics may be considered barriers to learning and success (Benard, 2004), the researcher believes that tailoring the teaching methods to fit students’ needs helped her personally as a student learn and retain the information taught.

Instructors Need to be Able to Build a Rapport and Connect with Basic Skills Mathematics Students.

The faculty participants in this study demonstrated Benard’s (2003) belief in the resiliency theory that resilient students can succeed when provided with a nurturing
environment that is engaging and meaningful. The participants’ perceived that caring attitudes toward the basic skills mathematics students and their high expectations of the students led to creating a productive learning environment. This is tied to the theoretical framework of the resiliency theory. The data from this study supported the findings of research conducted by Constantine et al. (1999) that concluded students’ resiliency is built on the premise that external protective environmental factors, such as high expectations, caring relationships, and meaningful participation, impact students’ success. Constantine et al. (1999) concluded that these external factors help the students develop social competence, sense of self, and sense of meaning that transcends ethnic and socio-economic status and affects students’ achievement.

The participants’ perceptions that having positive attitudes helps in connecting and building rapport with the students, thus creating a positive learning environment crucial to students’ success. A positive learning environment improves students’ attitudes toward learning basic skills mathematics and encourages students’ participation and collaboration in the learning process. The data from this study supported the recommendations of Tinto (1995) that when teachers have positive attitudes, they strive to create a “collaborative environment” that can increase students’ participation in the learning process.
Basic Skills Mathematics Instructors Would Benefit from Training on Teaching Methods that are Appropriate for Adult Learners and Include Culturally Responsive Teaching.

The researcher was surprised to find out that the instructors in this study did not receive any “formal” or customized training tailored for basic skills education. As discussed in chapter 4, many of the students in basic skills mathematics classes come from diverse cultural backgrounds. Research findings from a study conducted by Demmert (2003) that concluded in a culturally responsive environment, educational institutions need to provide basic skills mathematics teachers with appropriate professional development opportunities to learn about the students’ culture. Demmert (2003) determined that basic skills mathematics teachers must be aware and open to understand the different cultures around them in order to meet the students’ needs. This aligns with a study conducted by Howard-Hamilton (2000) that revealed that a culturally competent professional understands the importance of lifelong learning on diversity issues.

The instructors in this study perceived that understanding the students’ backgrounds and cultures is critical to having positive relationships. Positive relationships which include mutual respect and open communication, build trust and help the students in basic skills mathematics courses to stay engaged and motivated in the learning environment. The data from this study supports the findings of research conducted by Buskist and Saville (2001) that creating a positive rapport with the students
builds a bridge of trust, opens communication lines, facilitates students’ motivation for learning and enhances students’ receptivity of the basic skills mathematics subject taught.

The participants’ in this study perceived that having high expectations for the students helps the students persist and achieve positive results when expectations are presented in a comfortable learning environment that promotes “active” engagement of the students. The data from this study is consistent with the findings of research conducted by McDuffie (2004) that communication of the mathematical concepts must be linked to engaging the students in the learning process by providing a comfortable enough environment that encourages students to participate in the classroom discussions and mathematics problem solving activities. The participants in this study perceived that their high expectations of the students assist the students in taking control of their own learning destiny. The data from this study supported the findings of multiple research studies on expectations. One example is a study conducted by Rosenthal and Jacobson (1968) that suggested teachers’ expectations impact students’ behavior and performance. Another example is research conducted by Murphy and Alexander (2000) that determined challenging adult learners’ interests in mathematics will motivate the students to take an active role in their own learning.

As evident from the data in this study, positive attitudes and expectations for high achievement are intertwined with the flexibility to utilize diverse teaching methods in the classroom. The participants in the study perceived that a major factor to student success in basic skills mathematics is creating tailored classroom instruction to meet students’
needs. The instructors interviewed in this study perceived that encouraging students to be active learners through participation in the classroom discussions and collaboration with other students in group activities, such as mathematics problem solving exercises, is a critical factor in students’ success. The data also revealed that students need to be guided through the learning process by explaining the mathematics concepts in conjunction with active participation and engagement in the classroom. The data from this study supported the findings of research conducted by Mayer (2004) that relies on the constructivist learning model. Mayer (2004) proposed that for active learning to occur, the learners should be “cognitively active” during learning and the teachers use “guided practice” (p. 15). “Learning by doing” does not alone enhance the learning experience. It must be combined with “guided discovery” where the adult learner is guided through the concepts by the instructor (Mayer, 2004).

The participants in this study perceived that contextualizing the discussions and activities to solve mathematics problems that are applicable to the real world and to students’ lives, motivate students to participate in the classroom. The data from this study supported the findings of research on contextualized instruction conducted by Boroch et al. (2010) who concluded that creating discussions and activities that are applicable to the real world and the culture of the learners positively impacts student learning and achievement.
Instructors Need to be Knowledgeable about Study Skills/Organization Skills and How to Apply this Knowledge to Benefit their Students.

The participants in this study served a vastly diverse student population. The instructors demonstrated Dewey’s (1916/2004) constructivist learning theory that students build knowledge on prior knowledge and experiences by tailoring classroom instruction to meet the needs of the diverse student body. The participants in the study explained that in addition to tailoring the teaching methods they incorporate study skills, and organization skills to guide their students through the learning process and enhances their critical thinking abilities. Gettinger and Seibert (2002) explained that study skills and building knowledge are both fundamental to academic competence. Study skills are seen as academic enablers and essential tools for learning (Gettinger & Seibert, 2002).

The researcher believes that as a student in high school and college, she was able to learn good study skills because her own teachers incorporated study skills and organizational skills as part of their instruction in order to help the students learn how to study, to organize, and to retain the material studied. In addition, the researcher believes that good study skills reduce the chances of failing a course and allows the students to take advantage of the learning opportunities available. Gettinger and Seibert (2002) suggest that teaching study skills to students should be a priority for educators.

Basic Skills Mathematics Instructors Need Access to more Resources.

While demands on community colleges are increasing, resources available for the community colleges are decreasing. Due to an increase in California’s culturally diverse
population due to immigration and birth rates, community colleges have seen an increase in demand for their services (Cohen, 2005). Facilitating students’ success in basic skills mathematics education supports the need for more resources. Resources such as: computer stations and in classroom basic skills mathematics tutors/teaching assistants can provide a comfortable environment for learning. All of the participants in this study commented that having computers and/or tutors permanently assigned to basic skills mathematics classrooms can enhance the learning environment in the classroom. Two of the participants that teach Mathematics Boot Camp added that time spent working on a computer in the classroom will not replace instructional time or the interaction time between the instructors and the students.

All of the participants added that having student tutors dedicated to basic skills mathematics courses will allow them flexibility to create groups of students that can help each other in solving mathematics exercises, motivate students to engage in the discussions, and create a collaborative environment. The data from this study supports Bandura’s and McClelland’s (1977) social learning theory that students learn through interaction with peers that are more reliable “role models” because they went through similar experiences and succeeded. Providing resources that reach out to faculty and students in the classroom is central to improving retention and success rates of disadvantaged and historically underrepresented student populations (Nevarez & Wood, 2010).
**Basic Skills Mathematics Instructors Need Opportunities for Collaboration.**

Collaboration among basic skills mathematics instructors is essential for creating a learning environment for teachers and students. The participants in this study expressed that sharing experiences about their teaching strategies with other basic skills mathematics faculty is a learning experience in itself. It was apparent that the teachers consider learning as a continuous process. As adult learners, the instructors in this study exemplified Knowles’s (1970) adult learning theory. Knowles (1970) defined adult learning education as “a lifelong process of continuing inquiry” (Knowles, 1970, p. 41). The data from this study reinforced a theoretical model known as andragogy (Knowles, 1980). The assumptions behind andragogy are adult learners are ready to learn when they feel the need to deal with “real-life situations” (Knowles, 1980). The participants in this study feel the need to collaborate with other instructors where they can exchange the wealth of knowledge while building on their prior experiences (Knowles, 1980). The concept of “collaborative learning” allows individuals to construct knowledge by working together, building and forming mental frameworks to understand their surroundings (Cross, 1998).

**All Basic Skills Mathematics Students Would Benefit from Participation in Systemic Support Programs.**

The participants in this study explained that students in basic skills mathematics courses can benefit from attending college workshops or classes specifically designed for students enrolled in a basic skills mathematics program. The workshops may include
mathematics study skills, strategies for solving mathematics problems, and how to take an active role in learning. The workshops may help the students learn metacognitive practices that help them improve their study skills and mathematics problem solving skills (Gettinger & Seibert, 2002). Lucangeli et al. (as cited in Gettinger & Seibert, 2002) explain that students who are trained in metacognitive strategies in mathematics are able to assess the need to study, to plan, to evaluate, and take action to improve. The researcher believes that as the demand for basic skills mathematics education increases, so the need for support programs that enhance students’ learning and success.

**Revisiting the Theoretical Framework**

The study’s findings on mathematics instructors’ perceptions regarding the teaching methods, attitudes, and expectations that facilitate the success of basic skills mathematics students at the community college support the theoretical framework of this study. Students’ ability to succeed in college education depends on improving their chances of success in basic skills mathematics (Parsons et al., 2009). Thus, basic skills mathematics instructors play an important role in motivating their students.

According to Bandura (1997) success in mathematics coursework motivates students to set higher goals and put more effort into reaching those goals. The theories that support the findings of this study are constructivism, resiliency and adult learning. While the resiliency theory describes people who have overcome hardships and risk factors through self-efficacy, Werner (2005) states that programs such as building a caring community with caring adults can make a significant difference in the adaptation
of individuals to adversity they encounter. In the context of the findings of this study, the participants’ perceived that their high expectations and positive attitudes help build a trusting relationship with their students, which in turn help the students to actively engage in the teaching and learning process.

Constructivist learning theory highlights the importance of knowledge construction and that people learn best when they are permitted to rebuild ideas and concepts based on their past experiences (Bransford et al., 2006). Since many of the students in basic skills mathematics courses are adult learners, it was appropriate to include the adult learning theory as part of the theoretical framework. Adult learning is a continuous process that helps the adult learners’ progress from novices to experts and allows them to gain new knowledge and abilities and improve their intellectual development (Knowles, 1980). In the context of the findings of this study, the participants’ perceived that tailoring classroom instruction to incorporate study skills, organizational skills, collaborative group work, and supplemental instruction results in improving the students’ receptivity of the subject taught, building students’ confidence, and meeting the students’ needs, thus increasing their chances of succeeding in basic skills mathematics coursework.

Limitations

It is important to note that the limitations of a phenomenological study, like most qualitative studies, are mainly linked to the generalizability of the findings Creswell (2009). The limited number of faculty participants that taught basic skills mathematics at
the community college was a limitation. In addition, the participants who responded to the researcher and who were willing to participate in the study were all full time instructors, which eliminated any representation from part time instructors. Lastly, the research setting was limited to one community college in Northern California.

Nevertheless, because of the detailed descriptions that are provided, and the assumption that instructors at other community colleges have their own perceptions of their impact on student success in basic skills mathematics, this study may provide insights for others interested in the significance of the community college basic skills mathematics teachers’ perceptions and their impact on facilitating student success. The researcher’s recommendations are presented in the next section.

**Recommendations**

In light of the findings of this study regarding teachers’ perceptions about their teaching methods, expectations, and attitudes, and the impact they have on students’ success, the researcher offers six key recommendations for action.

**Culturally Relevant Curriculum**

The researcher recommends that California’s community college chancellor’s office develop a culturally relevant curriculum for basic skills mathematics education that can be tailored by individual community colleges to meet their students’ needs. The curriculum development process must create a collaborative committee that includes basic skills mathematics faculty from across the state, with input from educational administrators, and perhaps students who successfully completed the basic skills
mathematics coursework. The content of the curriculum may include study skills, organization skills, and positive rapport building skills, tailored to the needs of the culturally diverse student population in basic skills mathematics courses. This curriculum must be reviewed annually, and revised accordingly.

**Professional Development**

The researcher recommends that each district/community college should provide professional development training that includes teaching methodology on instruction and communications skills that is tailored to meet the needs of faculty teaching basic skills mathematics courses. The participants remarked that it is necessary for faculty to expand their pedagogical knowledge of current and future practices in educational and teaching methodologies. This will prepare the basic skills mathematics faculty in adapting their instructional methods in the classroom to meet students’ needs and build relationships with the students that allow for engagement in teaching and learning. Presenting basic skills mathematics concepts that are related to the students’ cultural backgrounds enables the students to make profound connections and strengthens their understanding of basic skills mathematics course work (D’Ambrosio, 2006; Rogoff, 2003).

**Resources**

During the current budget crisis in California, funding cuts have greatly impacted educational programs in the community colleges. However, state and local governments need to recognize that community colleges play an integral role in the education of low-income, historically underrepresented populations. As a result, their need for sufficient
resources, given the unique needs of their students, must be given a priority. The researcher recommends that state policy makers allocate priority funding for districts/colleges with highest number of students in basic skills mathematics courses.

Furthermore, the researcher recommends that policy makers and educational administrators provide incentives for teachers who persist in the field of teaching basic skills mathematics courses, and for individuals who exhibit interest in teaching basic skills mathematics at the community college level. In addition, the researcher recommends that resources be assessed in relation to students’ needs and then redirected to advance student success.

Collaboration

The researcher recommends that the district /community college administration should provide opportunities for basic skills mathematics instructors to network, collaborate, and share experiences with basic skills mathematics faculty in their own district and other districts within the state. This was identified by four of the participants in this study as significant in helping them tailor their instruction to meet the needs of their diverse students in the classroom. While some of the collaboration could happen within professional development and training, the community college administration could, for example, structure opportunities for peer collaboration or workshop series where basic skills mathematics faculty share their experiences and concerns that may have an impact on teachers’ attitudes and expectations regarding students’ success in the courses. Educational leaders and administrators must view the basic skills mathematics
teachers as adult learners that need a “holding environment” to support their cognitive growth and facilitate their learning and their capacity to handle their daily work (Drago-Severson, 2004). Educational administrators could provide a safe holding environment, a specific time for example, monthly or quarterly, at a specific location, devoted for basic skills mathematics instructors (Drago-Severson, 2004). This supportive environment would provide a space for dialogue and collaborative discussions, where faculty they can share their teaching practices and experiences, and enables them to learn and grow, academically and socially, in their teaching profession, in order to better serve their basic skills mathematics students and lead them to persist and succeed.

**Student Support**

Community colleges should require all incoming basic skills mathematics students to attend a course or a workshop that explains “how to be a successful college student”? Six of the participants in this study explained that students would benefit from such a course. All of the participants commented that incorporating academic and study skills in this course would enhance the college learning experience and improve the students’ chances to persist and succeed.

**Recruitment and Hiring**

Community colleges should continue to recruit instructional faculty for basic skills mathematics that represent the cultural and linguistic diversity of the student body at each of the colleges in the state of California. A participant in the study remarked that having caring and culturally competent faculty would benefit both teachers and students
in the learning and teaching process. Recruiting and hiring culturally responsive instructors can improve student-teacher relationship and lead to student success (Ogbu & Simmons, 1998). The researcher believes that hiring basic skills mathematics instructors who embrace diversity in the classroom and take the time to learn about their students’ cultures, beliefs, traditions, and languages will increase students’ motivation, enhance communication, and build trust.

**Advancing Scholarship and Educational Leadership**

This study aligns with the objectives of the Doctorate in Educational Leadership Program at California State University, Sacramento. The program strives to enhance educational leadership through transformational leadership, critical policy analysis, and data driven decision making. This study addressed all three program goals.

The leadership exhibited by the participants in this study, related to innovation, knowledge, and compassion in their basic skills mathematics classroom instruction, revealed that faculty with limited resources can be transformational leaders in promoting student success. This study also engaged in critical analysis as the researcher explored the perceptions of the faculty participants regarding teaching methods, attitudes, and expectations that facilitate to student success. Data driven decision making was utilized during the data analysis process as an instrument of determining a base for creating appropriate recommendations.
**Implications for Leadership**

Transformational leadership is essential for providing the resources and the support for faculty at community colleges. Transformational leaders provide venues for innovation in curriculum and instruction for students, and in recruitment and hiring of instructional and support staff for basic skills mathematics education.

It is important to note that the research site where this study was conducted already incorporates many of the recommendations due to their outstanding transformational leadership. Without the transformational leadership and support at this community college, tailoring basic skills mathematics instruction to meet students’ needs would be difficult. The transformational leadership is vital in providing the resources, the facilities, and the technology that aid in creating a nurturing environment that promotes collaboration and student achievement. A transformational leader is approachable and aware that team work brings the best outcomes. A leader fosters creativity and enables staff to think “outside the box”.

The researcher believes that visionary leaders are aware of student success models that challenge the traditional knowledge. Leaders are willing to experiment with innovative ways to accomplish goals. They are not afraid of challenges. An exemplary leader is constantly learning from their mistakes and failures (Kouzes & Posner, 2002). They acknowledge and reward innovation, accomplishments, and commitment of all their staff.
A transformational leader will use a combination of the solution strategies to ensure that collaborative efforts between all levels of administrators, faculty, and staff are part of the organizational culture and will never cease (Fullan, 2001). Leaders communicate their vision for the future effectively and ensure that the staff is “on board” with their leadership style (Bolman and Deal, 2008). Leaders must lead by example, inspire dedication in their staff, and always take the opportunity to achieve greatness (Nevarez & Wood, 2010).

**Implications for Data-Driven Decision Making**

The data from this study reveal that basic skills mathematics instructors perceive that their tailored instruction to meet students’ needs, their expectations for the students, and their attitudes toward the students have an impact on students’ learning and students’ success. The researcher believes that the data collected regarding teachers’ perceptions provide insight into the daily interactions in the classroom between the participants and their students. The researcher also realizes that the data gathered provides valuable information on factors that contribute to and facilitate student success in basic skills mathematics.

It is also important to realize that basic skills mathematics instructors have the opportunity to gather data during the course of their teaching that can provide insights into the issues examined in this study. For instance, data from formative and summative assessments can and should be used to make decisions about the effectiveness of instructional methods. Based on those data, instructors can modify their approaches as
needed to meet the needs of their students. In addition, attitudinal data could be gathered to monitor the extent to which students are feeling confident and supported, both in basic skills mathematics courses and in general.

The researcher believes that the data around teachers’ perceptions regarding teaching methods, expectations, and attitudes, should be disseminated to key stakeholders who might be unaware of basic skills mathematics instructors’ daily experiences in the classroom that impact student success. Although having data does not guarantee effective decisions will be made, having the data informs the decision making process and, if used appropriately, can lead to improvements in the teaching and learning process (Ikemoto & Marsh, 2007).

Educators and policy makers use data for informing aspects of their daily work and use data to make decisions to improve teaching and learning (Ikemoto & Marsh, 2007). Data from this study should also be shared with other basic skills mathematics instructors to inform and improve the teaching and learning process and to promote student achievement.

**Implications for Policy and Practice**

Community colleges often represent the stepping stone for many students, including students who plan to transfer to four year colleges (Quigley & Bailey, 2003). This study revealed that basic skills mathematics education plays an important role in preparing students for vocational training and transferring to four year universities. Basic skills mathematics instructors play a fundamental role in student preparation and success.
The literature review of this study, the theoretical framework, and the data analysis and interpretations revealed the following implications for policy and practice.

First, policy makers at the state and local governments must recognize that community colleges play a critical role in the education of low-income and historically underrepresented populations. The need for sufficient resources to support basic skills mathematics education and basic skills mathematics’ instructors must be given a priority in order to increase the number of students who succeed in basic skills mathematics coursework and eventually graduate and/or transfer to four-year colleges.

Second, policy-makers and educational administrators may be able to use the findings of this study to bring awareness to what basic skills mathematics instructors perceive as useful teaching methods, and subsequently allocate resources to professional development where the instructors may be able to share their experiences with other educators, of what works best for them. In addition, professional development need to include cultural competency training, where basic skills mathematics instructors may be able to share their experiences with other educational professional on the attitudes and expectations that they perceive would impact student success in basic skills mathematics courses.

Third, policy makers and educational administrators must find ways to tailor the recruitment and hiring process to attract individuals that are interested in teaching basic skills mathematics courses. Hiring teachers that share the same or similar cultural
backgrounds as the diverse student population in basic skills mathematics may contribute to the retention and success of minority students.

As discussed previously in the recommendations, having culturally competent faculty would benefit both teachers and students in the learning and teaching process. Recruiting and hiring culturally responsive instructors can improve student-teacher relationship and lead to students’ success (Ogbu & Simmons, 1998). The researcher believes that hiring basic skills mathematics instructors who embrace diversity in the classroom and take the time to learn about their students’ backgrounds and cultures will enhance the learning environment by building trust between the teachers and the students, hence increasing students’ engagement in their own learning and success.

One final, but important, implication derived from this study is the need for educational administrators to acknowledge that creating supportive social and educational programs, that provide resources and incentives for teachers interested in basic skills mathematics education, is especially central to improving the retention and success rates of students, especially those from low-income and historically underrepresented populations (Nevarez & Wood, 2010).

**Future Research Studies**

In conducting this research study, the researcher discovered that this research could definitely be used as a basis for potential additional studies that may address this study’s specific limitations or increase the contribution to the scholarly base of literature on the topic of teachers’ perceptions and their impact on students’ success in basic skills
mathematics. Based on the findings of this study, the following recommendations for further research are offered for further consideration:

Since this study was limited to one research site and limited number of participants, the researcher recommends that this study should be replicated utilizing multiple research sites, with a larger sample size that includes basic skills mathematics participants from multiple community college districts within and outside the state of California.

Another area for future research would be to compare and contrast full time basic skills mathematics instructors’ perceptions versus part time basic skills mathematics instructors, at multiple community colleges within and outside the state of California, regarding teaching methods, expectations, and attitudes that impact student success.

Further studies need to identify whether and how teachers’ ethnic and cultural differences can impact students’ success. Perhaps cultural differences in terms of language, practices, values, beliefs, and attitudes can give rise to diverse methods of teaching and learning in basic skills mathematics, hence impact student success.

**Researcher Reflections**

The most important discovery for the researcher throughout this study is the realization that teachers’ perceptions have a profound impact on students’ persistence and success in basic skills mathematics. This study allowed the teachers who participated in the study to have their voices heard. From the researcher’s standpoint, this study has been a rewarding and eye opening experience. This study allowed the researcher to
understand the significance of the teacher’s role in the education of adult learners (Knowles, 1980) and in the process of knowledge construction (Bransford et al., 2006). The researcher believes that caring and compassionate instructors who understand students’ cultures and create supportive relationships enhance the learning environment and increase students’ success.

The researcher is encouraged by the participants' recognition that their students need to learn more than basic skills mathematics to succeed. The participants recognize that their students need to learn study skills, organizational skills, and critical thinking skills. The researcher was surprised that the participants are willing and open to trying different, innovative approaches to help their students persist and succeed.

The participants’ dedication toward their students was obvious, as the researcher observed two of the participants interact with their students with care, compassion, and kindness. The researcher hopes that the participants will continue to be open to innovation and ways to improve the educational outcomes of their diverse population of students in basic skills mathematics. The researcher would like to share quotes from three of the participants as powerful sentiments that resonated with the researcher:

- … *Because math is a language. How do you learn the language? You’ve got to practice it; you’ve got to communicate it.*

- … *You have to almost help students develop a better attitude towards learning, not just math.*

- *I really do believe everybody could do math, and if I didn't believe that, I wouldn't be teaching.*
Conclusion

Basic skills mathematics education is one of the greater challenges facing community colleges and universities in the United States. Community colleges are considered a central point of access to higher education for students, especially for minority and historically underrepresented students. With the increase of unprepared and underprepared high school graduates, community colleges have seen an increase in the demand for basic skills mathematics instruction. In California, approximately 85% of community college freshman students need basic skills mathematics instruction (PPIC, 2011). To better understand and provide insight into basic skills mathematics instructors’ perceptions and the impact on students’ achievement, the researcher utilized phenomenological qualitative research design for this study. The phenomenological approach allowed the researcher to gain a deep perspective about the participants’ perceptions regarding the impact of teachers’ attitudes, expectations, and teaching methods, on the learning process and students’ success in basic skills mathematics courses.

From the study the researcher learned that all of the participants are experienced instructors in the field of basic skills mathematics education. The researcher was amazed how energetic, enthusiastic, forthcoming and compassionate the participants were. The findings of this study indicated that the faculty participants exhibited transformational leadership qualities because they are aware of and understand the need to be innovative in their teaching styles in order to increase students’ persistence and
success. The participants’ ability to tailor their teaching methods to meet individual
students’ needs facilitates students’ receptivity of basic skills mathematics. Their
positive attitudes and high expectations provide a nurturing environment that motivates
students’ engagement and contributes to students’ learning and success. It is important to
note that the participants’ are passionate about mathematics and have great concern and
respect for their students’ well-being. Their concern for their students and respect for
students’ learning were reflected in the findings. Their compassion and caring attitudes
create a trusting learning environment that enhances the lives of the students and
increases their chances for success in achieving their educational goals.
APPENDICES
APPENDIX A

Consent Form

Interview Consent Form

You are invited to participate in research which will be conducted by Samia Aguirre, a doctoral candidate in Educational Leadership & Policy Studies at California State University, Sacramento. The purpose of this study is to discover Community College Mathematics Instructors’ perceptions on the impact of their teaching methods, attitudes, and expectations on community college basic skills mathematics students’ learning and success.

If you decide to participate in the interview, the interview will take place at a later date and will be held at the community college (exact location will be determined by the researcher and the participant). The interview will be 45 minutes to 1 hour in length. You will be contacted by email to schedule a meeting date and time.

You have the right to skip any questions and/or stop participating at any time without consequences. If you decide to participate you are free to withdraw your consent and to discontinue participation at any time without penalty. Please note that counseling services are available upon request. There is no compensation for participation in this study and there is no guarantee that you will receive any benefits from this study.

The researcher will use pseudonyms to ensure participants privacy and will store the audiotapes in a secure location. Quotations from the recordings may be reported in presentations and publications, but they will not be associated with any personal information. All consent forms, interview questions, and interview recordings will be stored securely and kept in a locked cabinet at the researcher’s home office. All data collected, consent forms, audiotapes, and the transcripts will be destroyed at the completion of the study.

If you have any questions about this research, please feel free to contact the researcher Samia Aguirre or you can contact Dr. Robert Pritchard at (916) 278-4587 or Pritchard@csus.edu. You will be given a copy of this form to keep.

Your signature below indicates that you have read the information above and agree to participate in the study. Thank you for your participation.

I agree to have the interview tape recorded:        Yes ____        No __

Print Participant Name __________________________        Date __________
Participant Signature __________________________        Date __________
APPENDIX B

Interview Questions

Interview Guide

1. Please tell me about your teaching experience in basic skills education at the community college-level.

2. In your opinion, what prior skills do students need to succeed in basic skills mathematics courses?

3. In your opinion, what are the best teaching methods that you have used in basic skills mathematics classes?

4. What are your perceptions regarding the teaching methods that are useful for facilitating student success in community college basic skills mathematics courses?

5. Have you participated or would like to participate in any training for teaching basic skills mathematics at the community college-level? If so, what type of training?

6. In your opinion, what are the barriers to students' learning and success in basic skills mathematics courses?

7. Please tell me about your expectations regarding student behavior and student persistence in your basic skills mathematics classes.

8. What are your perceptions regarding the impact of teachers' expectations on student learning and success in community college basic skills mathematics courses?

9. What are your perceptions regarding the impact of teachers' interactions with students and building rapport on student learning in community college basic skills mathematics courses?
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