

2012

The Relationship of Learner-Centered Beliefs of North Carolina Virtual Public School (NCVPS) Teachers and Student Achievement on the North Carolina End-of-Course Assessments

Eddy R. Malave
Gardner-Webb University

Follow this and additional works at: https://digitalcommons.gardner-webb.edu/education_etd



Part of the [Education Commons](#)

Recommended Citation

Malave, Eddy R., "The Relationship of Learner-Centered Beliefs of North Carolina Virtual Public School (NCVPS) Teachers and Student Achievement on the North Carolina End-of-Course Assessments" (2012). *Education Dissertations and Projects*. 63.
https://digitalcommons.gardner-webb.edu/education_etd/63

This Dissertation is brought to you for free and open access by the School of Education at Digital Commons @ Gardner-Webb University. It has been accepted for inclusion in Education Dissertations and Projects by an authorized administrator of Digital Commons @ Gardner-Webb University. For more information, please see [Copyright and Publishing Info](#).

The Relationship of Learner-Centered Beliefs of North Carolina Virtual Public School
(NCVPS) Teachers and Student Achievement on the North Carolina End-of-Course
Assessments

by
Eddy R. Malave

A Dissertation Submitted to the
Gardner-Webb School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Gardner-Webb University
2012

Approval Page

This dissertation was submitted by Eddy R. Malave under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

Gregory Firn, Ed.D.
Committee Chair

Date

Ronald I. Nanney, Ed.D.
Committee Member

Date

Fredrick W. Timmerman, Jr., Ph.D.
Committee Member

Date

Jeffrey Rogers, Ph.D.
Dean of the Gayle Bolt Price School
of Graduate Studies

Date

Abstract

The Relationship of Learner-Centered Beliefs of North Carolina Virtual Public School (NCVPS) Teachers and Student Achievement on the North Carolina End-of-Course Assessments. Malave, Eddy R., 2011: Dissertation, Gardner-Webb University, Learner-Centered Beliefs/NCVPS/Student Achievement/School Reform/Teacher Reflection

Current federal, state, and district mandates charge educators with reform efforts to improve student achievement. Efforts to transform the educational system are facing enormous public pressure to improve. Despite increasing support for learner-centered perspectives, approaches that focus on learners and learning are often based on conflicting assumptions about what is needed for learners to achieve desired learning standards and outcomes (McCombs & Whisler, 1997). Such approaches have a big impact on what teachers believe and a subsequent influence on student outcomes. This study attempted to establish teacher beliefs and their effectiveness on student achievement on the North Carolina EOC assessments.

A non-experimental, quantitative study design was used to collect data to examine teachers' beliefs about the learner, learning, and teaching as well as the influence of their beliefs on student achievement in Algebra I, Biology, and English I classes. Data were collected via the Teacher Beliefs Survey from 31 NCVPS teachers, and students' achievement data was gathered from the 2010-2011 NC EOC assessments.

It was determined that learner-centered beliefs of NCVPS teachers are not statistically significant relative to their students' performances on the North Carolina End-of-Course (EOC) assessments. Future researchers should consider conducting a qualitative research study to interview more diverse participants in terms of race and geographical location to determine variations of the effects of teaching strategies, which could be more focused on distance-learning environments.

Table of Contents

	Page
Chapter 1: Introduction	1
Background	1
Statement of the Problem	7
Limitations	8
Delimitations	8
Overview of Chapters	9
Chapter 2: Review of the Literature	10
Introduction	10
Research Overview	11
Descriptive Research	13
Experimental/Quasi-Experimental Research	19
Learner-Centered Battery	19
Summary of the Learner-Centered Battery	24
Teacher Effectiveness	24
Summary of Literature Review	31
Purpose Statement	32
Hypotheses	33
Research Questions	34
Chapter 3: Methodology	36
General Design	36
Participants	36
Instrument	38
North Carolina End-Of-Course Algebra I Test	39
North Carolina End-Of-Course Biology Test	40
North Carolina End-Of-Course English I Test	41
Procedures	42
Chapter 4: Results	46
Data Analysis	52
Summary of Results	59
Chapter 5: Discussion	61
Review of the Purpose of the Study	61
Demographic Information	61
Learner-Centered Beliefs	62
Discussion of Results	63
Conclusion	72
Recommendations for Future Study	76
Delimitations	78
References	80
Appendices	
A Learner-Centered Psychological Principles	87
B Teacher Beliefs Survey	89
C Achievement Levels for the North Carolina End-Of-Course Tests	100
Tables	
1 Frequency Distribution of Study Variables	37

2	Student Levels of Proficiency	47
3	Learner-Centered Beliefs Means	48
4	Differences Among Teachers on Learner-Centered and Non-Learner-Centered Beliefs	49
5	Learner-Centered Teachers	49
6	Non-Learner-Centered Teachers	50
7	Teachers Above the Validation Mean for Learner-Centered Beliefs	50
8	Teachers Above the Validation Mean for Non-Learner-Centered Beliefs: Learner	51
9	Teachers above the Validation Mean for Non-Learner-Beliefs: Learning and Teaching	51
10	Cronbach's Alpha Coefficients for Teacher Beliefs Survey Factors	52
11	One-way ANOVA of TBS Factors by Teacher Group	53
12	LCB Scores and <i>t</i> -Test Results by Achievement Group	54
13	LCB Levene's Test for Equality of Variances	55
14	NLCB and <i>t</i> -Test Results by Achievement Group	56
15	NLCB Levene's Test for Equality of Variances	56
16	NLCBTL and <i>t</i> -Test Results by Achievement Group	57
17	NLCBTL Levene's Test for Equality of Variances	57
18	Pearson's Product-Moment Correlation Coefficients Among Factors	58
19	Pearson's Product-Moment Correlation Coefficients Between Teacher's Beliefs and Proportion of Students with Levels I/II and Levels III/IV	59

Chapter 1: Introduction

Background

The wave of educational reform (1983-1986) was a top down approach in reaction to the report *A Nation at Risk* (National Commission on Excellence in Education, 1983). The report argued that educational problems in the United States were attributed to low academic standards and poor quality of instruction. Lambert and McCombs (1998) stated, “When we shift attention to what the national reform agenda has identified as the overwhelming need facing American education, it is consistent with the need to facilitate learning and achievement for every student” (p. 5). Lambert and McCombs (1998) added, “As the reform agenda proceeds multi-directionally and at an accelerated rate in addressing the national educational goals, the need for a defensible framework to guide complex directions regarding standards curricula, assessment, instruction, and the very structure and organization of schools become critical” (p. 7).

The Elementary and Secondary Education Act (ESEA) of 2002, currently referred to as No Child Left Behind (NCLB) (2002), has shaped the educational reform efforts for the past 10 years. The law mandated Annual Yearly Progress (AYP) in student achievement with an increased focus on reading and math. NCLB changed the federal government's role in K-12 education by focusing on school success as measured by student achievement. The Act also contained four basic education reform principles: stronger accountability for results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work (NCLB, 2002).

Mitchell Yell (2006) stated in simple terms that the primary goals of NCLB are:

- All students will achieve high academic standards by attaining proficiency or better in reading and mathematics by the 2013–2014 school year.
- Highly qualified teachers will teach all students
- All students will be educated in schools and classrooms that are safe, drug free, and conducive to learning.
- All limited English proficient students will become proficient in English.
- All students will graduate from high school. (p.1)

Adequate Yearly Progress (AYP) measures the yearly progress of different groups of students at the school, district, and state levels against yearly targets in reading/language arts and mathematics. All public schools in the United States must report AYP results (Public Schools of North Carolina State Board of Education/Department of Public Instruction, 2011a).

The North Carolina Department of Public Instruction (NCDPI) made improvements in student achievement but has not reached the target goal of all students being proficient in reading and math as required by NCLB (Public Schools of NC State Board of Education/DPI, 2011a). Its current reform efforts are focused on student achievement and teacher effectiveness. Schools that fail to demonstrate AYP receive extra support and can face sanctions such as restructuring if AYP scores fail to significantly improve over time.

With the focus on student achievement, teacher effectiveness has received a lot of attention, state-wide and nationally. Santos and Gebeloff (2012) reported that California and New York are in the process of basing teacher performance evaluations, in part, on student test scores. In 2009, the Mid-continent Regional Educational Laboratory

(McREL) developed a teacher evaluation instrument and accompanying process based on elements of a 21st century education and a set of research-based standards. McREL's Teacher Evaluation Standards (2009) are based upon the North Carolina Professional Teaching Standards and are used with the permission of the NCDPI (Kendall, Alpert, & Odum, 2011). NCDPI recently completed a contract with McREL to provide a statewide, web-based online evaluation system as the tool for completing the principal, assistant principal, and teacher evaluations. The effort started with the 2010-2011 school year (Public Schools of NC State Board of Education/DPI, 2011c). According to the McREL (2011) study, *McREL Online Teacher and Principal Evaluation Systems*,

Teachers have the greatest influence on student learning. But determining teacher effectiveness requires more than a simple checklist of do's and don'ts that fails to account for the depth and quality of teacher performance. Therefore, today's educators require new tools to effectively navigate the complexities of teaching and learning. McREL's teacher evaluation system is a holistic evaluation of the teacher's contribution to the school, school district and most importantly, student learning. (p. 2)

The system contains standards that use a rubric to evaluate teacher performance. Each standard in the rubric contains multiple parts, and the observers can rate the teachers in the following ways: developing, proficient, accomplished, distinguished, or not demonstrated (which would require an explanation). Standard V of McREL's Teacher Evaluation Rubric is an example of the holistic approach. Kendall et al. (2011) explained,

This teacher evaluation rubric addresses standard V; how teachers reflect on their practice:

- a. Teachers analyze student learning
- b. Teachers link professional growth to their professional goals
- c. Teachers function effectively in a complex dynamic environment. (p. 67)

Turning to student achievement, the North Carolina General Assembly enacted a general statute to create the Business Education Technology Alliance (BETA) Commission in September 2002. Since its inception, the BETA Commission, under the leadership of Governor Bev Perdue, established the E-Learning Commission and charged it with establishing the North Carolina Virtual Public School (NCVPS, 2008, 2009). The purpose of the NCVPS is to provide courses that students are unable to take at their local schools. The initial course offerings were for high school students. In subsequent years, course offerings were made available for middle school students as well (Public Schools of NC State Board of Education/DPI, 2011b). In order to increase student learning, courses were offered free of charge to all public school students and limited to enrollment caps due to budget constraints.

The use of distance education has increased dramatically in recent years. As in the past, growth in distance education reflects the need for courses among students who are not able to participate in traditional face-to-face courses (Baldarrain, 2006). Continuing the trend, computer and web-based training courses are sweeping the nation. In the past 10 years, a concerted effort has been made to increase the presence of technology in K-12 classrooms. Highlights of the 2012 North Carolina Public School Budget allocated 27,708 million dollars for education innovations (Public Schools of NC State Board of Education/DPI, 2011b). A federal grant from NCLB added another \$2.378 million (United States Department of Education, 2008).

Many school districts throughout the United States are reporting increasing

averages in student-to-computer ratios and in Internet access in schools. David Nagel (2011) reported that the majority of public school districts in the United States have students who participate in distance education courses at some level, according to data released by the National Center for Education Statistics, but that most of those districts are not delivering the education themselves.

Nagel (2011) cited the report, "Distance Education Courses for Public Elementary and Secondary School Students: 2009-10,"

[Which] indicated that a full 55 percent of districts have students who were enrolled in distance education courses in the 2009-2010 school year (the latest full school year for which such information is available). Half of those districts reported that students were participating in distance courses provided by a higher education institution, 47 percent from independent vendors, and 33 percent from state virtual schools. (p. 1)

Several researchers, however, have argued that the mass infusion of technology in the classroom has had a minor or negative impact on student learning (Cuban, 2001; Robertson, 2003). There are considerable barriers that technology teachers face on a daily basis: software download restrictions, bandwidth limitations, content filtering, and network reliability and availability. Teachers utilizing technology must always have contingency plans and alternate activities on hand in case of hardware or network problems.

Further, recent studies showed that achievement gaps between advantaged and disadvantaged students on state tests have narrowed in many instances over the past decade—continuing a trend that appears to have been bolstered in the 1990s by the standards-based-reform movement. The study from the Center on Education Policy

(2010) analyzed the achievement gap between low-income students and their peers, and between minority and white students, using test data from all 50 states collected from 2002 through 2009.

Sawchuk (2009), in an article for *Education Week*, commented, “Viewing the gaps through a variety of lenses, the report finds that, on the whole, the disparities appear to be narrowing because of the accelerated achievement of lower-performing groups, not slower progress by high-achieving groups” (p. 2). Nevertheless, achievement gaps continue to remain as large as 20 percentage points or more in some states, the report indicated (Sawchuk, 2009).

Considering the data, a Professional Learning Community (PLC) is one strategy to improve both teacher and student learning. DuFour, DuFour, Eaker, and Many (2006) stated, “A PLC is composed of collaborative teams whose members work *interdependently* to achieve *common goals* linked to the purpose of learning for all.[...] The very essence of a learning community is a focus and commitment to the learning of each student” (p. 3).

In 1987, The National Board for Professional Teaching Standards (NBPTS) was created in order to improve teaching and student performance (NBPTS, 2002). At the time the National Board was founded in 1987, it was understood that a critical first task was the development of a policy that would spell out the National Board's vision of accomplished practice. In 1989, it issued its policy statement, *What Teachers Should Know And Be Able To Do*, which has served as a basis for all of the standards development work NBPTS has conducted. To this day, it remains the cornerstone of the system of National Board Certification and has served as a guide to school districts, states, colleges, universities, and others with a strong interest in strengthening the initial

and ongoing education of America's teachers. It also holds the promise of being a stimulus to self-reflection on the part of teachers at all levels of accomplishment as well as a catalyst for healthy debate and the forging of a new professional consensus on accomplished practice in each field of teaching (NBPTS, 2002). The NBPTS created a set of standards and a voluntary process that allowed teachers to become National Board Certified. National Board Certification is based upon the teacher's knowledge and performance. It is based on five core propositions. Proposition number five is directly related to learning communities. It states:

Accomplished teachers contribute to the effectiveness of the school by working collaboratively with other professionals on instructional policy, curriculum development and staff development. They can evaluate school progress and the allocation of school resources in light of their understanding of state and local educational objectives. They are knowledgeable about specialized school and community resources that can be engaged for their students' benefit, and are skilled at employing such resources as needed. Accomplished teachers find ways to work collaboratively and creatively with parents, engaging them productively in the work of the school. (NBPTS, 2002, p. 4)

Statement of the Problem

Given the increased popularity of distance learning training methods mentioned previously, research helps determine which teaching methods are best suited for use in virtual public schools. This study included an analysis of the empirical data gathered from computer-based assessments records as well as surveys of NCVPS teachers.

Unlike previous research on school reform that has tended for the most part to address curriculum and organizational changes in our present system, this study

determined if there was a difference as well as a relationship between learner-centered beliefs and student achievement. Why learner-centered? Researchers at McREL identified an additional domain of reform that, in their estimation, has seldom, if ever, been studied. That domain included defining and examining teacher beliefs and practices considered learner-centered and the degree to which student achievement, motivation, and learning is influenced.

The researcher examined the relationship of learner-centered beliefs of NCVPS teachers and their students' performances on the North Carolina End-of-Course (EOC) assessments. The assessments were designed to measure student performance on the goals, objectives, and grade-level competencies specified in the North Carolina Standard Course of Study (Public Schools of NC State Board of Education/DPI, 2011c). The outcomes of the study were based on quantitative data collected using North Carolina's Algebra I, Biology, and English I EOC assessment scores for the 2010-2011 school years and by using the Assessment of Learner-Centered Practices survey.

Limitations

This study was a correlational research study designed to examine relationships, not cause and effect, and was a Post-Hoc analysis. The number of participants invited to participate was a convenience sample. There were a limited number of teachers available from whom to collect data.

Delimitations

As a result of the limited sample size and the number of North Carolina school regions involved in the study, the researcher categorized school-performance levels as low, medium, or high and divided them equally and focused on the Algebra I, Biology, and English I End-of Course assessment scores for school years 2010-2011.

Overview of Chapters

Chapter 2 contains a literature review that supports the intent of this study. The literature review followed the structure described by Gersten (2009). In particular, it contains a study-by-study review of the research that pertains to the following: a) the theory of learner-centered beliefs, b) a sampling of the existing research of learner-centered beliefs to show the relationship to student achievement, and c) a summary of studies that illustrate the cause and effect of learner-centered beliefs and student achievement.

Chapter 2 includes how teacher beliefs and practices are considered learner-centered and the degree to which student achievement, motivation, and learning are influenced. The culmination of Chapter 2 provides the justification and rationale for this study.

Chapter 3 provides an in-depth explanation of the methods and methodology selected for this study. Chapter 4 includes the analysis of the data collected. It relies on the use of inferential and descriptive statistics. As a consequence of the analysis, Chapter 5 provides a discussion of the results and, in closing, provides recommendations.

Chapter 2: Review of the Literature

Introduction

The report *A Nation at Risk* (NCEE, 1983) argued that educational problems in the United States were attributed to low academic standards and poor quality of instruction. The American Psychological Association (APA) adopted the *Learner-Centered Psychological Principles* (LCPPs) in 1997, largely as a response to what the APA considered ill-informed decisions made based on *A Nation at Risk* (NCEE, 1983); McCombs and Miller (2009) concluded, “Student achievement in the United States showed an alarming decline, especially in relation to other countries, such as Japan. The APA was concerned that the push towards testing and accountability was not informed by evidence regarding what best supports and fosters learning” (pp. 27-28).

Meanwhile, the rapid growth of online learning opportunities presented several new challenges (U.S. Department of Education, 2008). For one thing, online learning was a relatively new development in K-12 education but was rapidly expanding in both number of programs and participants. Further, the U.S. DOE report states that, “According to a report by the North American Council for Online Learning (NACOL), ‘As of September 2007, 42 states [had] significant supplemental online learning programs (in which students enrolled in physical schools take one or two courses online), or significant full-time programs (in which students take most or all of their courses online), or both’” (p. 1). In addition, the Internet houses an ever-expanding number of Web sites with a broad range of education resources for students, parents, and teachers. Given this expansion and a dearth of existing research on the topic, it is critical to conduct rigorous evaluations of online learning in K-12 settings to ensure that online learning does what people hope it will do: help improve student learning.

The report *Evaluating Online Learning: Challenges and Strategies for Success* conducted by the U.S. Department of Education (2008) argued:

Those undertaking such evaluations may well encounter a number of technical and methodological issues that can make this type of research difficult to execute. For example, the scant research literature on K-12 online learning evaluation provides few existing frameworks to help evaluators describe and analyze programs, or tools, such as surveys or rubrics, they can use to collect data or assess program quality. Another common challenge when students are studying online is the difficulty of examining what is happening in multiple, geographically distant learning sites. And multifaceted education resources—such as vast Web sites offering a wide range of features or virtual schools that offer courses from multiple vendors—are also hard to evaluate, as are programs that utilize technologies and instructional models that are new to users. (p. 1)

Research Overview

The review of the literature coincided with the three levels of research prescribed by Gersten (2009) and ends with sections containing a purpose statement, the hypothesis statements, and a collection of research questions. Gersten (2009) described descriptive research as “a way of looking at research studies and bodies of research that clearly delineates different types of research and the very different implications for practice... Although there is some overlap between categories, most empirical studies in the field of learning disabilities seem to fit one of the three” (par. 2). He designated the three levels of research simply as a) descriptive research, b) well-controlled experimental and quasi-experimental research studies, and c) large scale field studies. He followed these designations with descriptions of each. Gersten (2009) referred to this first type of

research category as descriptive and stated,

Descriptive research can utilize either qualitative or quantitative methodologies.

These studies can be very useful for theory building, for helping shape

interventions, and for helping understand the target or focus of an

intervention. . . . Descriptive studies can also help us understand common

implementation problems and other pressing problems in current practice. (par. 3)

Gersten (2009) referred to the next research category simply as well-controlled

experimental and quasi-experimental research studies. He explained, “these studies are

the building blocks of scientific knowledge about teaching and learning. These studies

allow us to see, for example, what students with learning disabilities can learn when

taught by excellent teachers using state of the art methodologies (Gersten, 2009, par. 4).

He stated that the third research category involved large-scale field studies. They can

involve multiple sites and can rely on the use of longitudinal data files. With large

numbers of students and teachers involved, the implementation may become problematic.

Large-scale field studies can inspire confidence in the findings; however, the internal

validity may be weaker (Gersten, 2009). A review of literature followed the structure

explained by Gersten (2009).

The review of descriptive research starts with a focus on the origins of the

LCCPs and the rationale for their development. Research in this section includes the

theoretical research by the APA and McREL Task Force (1993), McCombs and Meece

(2003), McCombs and Lauer (1997), and McCombs and Whisler (1997).

Experimental and quasi-experimental research includes both of the Phase I and

Phase II validation results of the self-assessment tools used to identify and describe

profiles of effective beliefs, practices, and discrepancies between teacher and student

perspectives (APA, 1997; McCombs & Lauer, 1997; McCombs, Lauer, & Peralez, 1997; McCombs & Whisler, 1997). Included are reviews of studies used to determine how the learner-center behavior and practices of teachers affect student motivation and academic achievement.

Large scale research includes the description of how learner-centeredness fits into the learner-centered framework for educational innovation and improvement. After that, a description of teacher effectiveness is presented. This section includes the results of studies conducted by McCombs and Whisler (1997), Weinberger and McCombs (2001), Eaker, DuFour, and DuFour (2002), McCombs and Quia (2002), and others that measure teachers' efficacy, learning, and motivation and their impact on student achievement.

Finally, this review of the literature concludes by summarizing the three levels of research illustrated by Gersten (2009) and culminates with an examination to study the correlation of learner-centered practices with student achievement in detail.

Descriptive Research

A historical overview of the Learner-Centered Psychological Principles. In 2002, Weinberger and McCombs offered their perspectives regarding the development of the learner-centered principles by commenting,

Beginning in 1990, the American Psychological Association (APA) appointed a special Task Force on Psychology in Education, one of whose purposes was to integrate research and theory from psychology and education in order to surface general principles that have stood the test of time and can provide a framework for school redesign and reform. The result was a document that originally specified twelve fundamental principles about learners and learning that, taken

together, provide an integrated perspective on factors influencing learning for all learners. (p. 5)

The document was revised in 1997 (APA, 1997) and now includes 14 principles (see Appendix A). The only difference is that additional attention was given to principles regarding diversity and standards (Weinberger & McCombs, 2002).

The learner-centered model provided “a research-validated, principle-based framework for both sharing power and control with students and for building the positive relationships and connections essential to high student motivation and achievement” (McCombs & Whisler, 1997, p. 10). The Learner-Centered Battery (LCB) was developed based on the LCCPs (APA, 1997), and McCombs and Whisler (1997) stated, “It is a set of short self-assessment tools for teachers and their students that can help teachers identify profiles of effective teacher beliefs, practices, and discrepancies between teacher and student perspectives” (p. 10).

The Learner-Centered Principles were divided into four domains. The first domain related to meta-cognitive and cognitive factors. Anderson and Krathwohl (2001) explained, “the first domain was founded on conceptual knowledge, which includes schemas, mental models, or implicit or explicit theories in different cognitive psychological models” (p. 48).

The second domain contained motivational and affective factors. Anderson and Krathwohl (2001) explained,

Motivation is a complicated and confusing area, with many models and theories available. Although motivational beliefs are usually not considered in cognitive models, a fairly substantial body of literature is emerging that shows important links between students’ motivational beliefs and their cognition and learning. (p.

59)

They concluded, “the single physiological theory that adequately provides a basis for all learning has yet to be found” (Anderson & Krathwohl, 2001, p. 258).

The third domain described developmental and social factors, which Lambert and McCombs (1998) commented on in the following:

One of the most powerful observations that has emerged in the psychological literature in the past several years, and a premise that has been woven throughout our discussion of the preceding dimensions, is the recognition that learning is continuously and markedly shaped by the social context in which it occurs (pp. 39-40).

The fourth dimension concluded with individual differences. Subsequently, Lambert and McCombs (1998) reflected, “that since the early information processing studies, knowledge has come to be viewed as a multifaceted construct that encompasses many interactive dimensions . . . including socio-cultural knowledge (Principles 11 and 13), strategic abilities (Principle 4), personal beliefs (Principle 13), and goals (Principle 2)” (p. 29). These findings reflected an extensive body of research in these areas.

McCombs and Whisler (1997) “explored recent educational reform efforts and noted that increasingly they are based on the research on learning. . . . They saw changes in school organization, management structures, and policies that contribute to effective teaching” (p. 43).

Upon further research, McCombs and Whisler (1997)

Concluded that in addition to a focus on *learning*, it is critical that there be an equal focus on the *learner*. The knowledge base of both *learners* and *learning* must be considered if new designs for schools are going to have maximum impact

on increasing motivation, learning, and achievement for more of our learners. (p. 44)

Ultimately, McCombs and Whisler (1997) suggested that the learner-centered model addressed what is missing: the personal domain. They argued that the following directly address the personal domain:

- Sharing Power and Control with Students
- Involving Students in the learning Process
- Shifting Teacher and Student Roles

Thus the research shows that teaching guided by a learner-centered perspective can enhance students' motivation to learn and more importantly, their actual learning and performance. (McCombs and Whisler, 1997, p. 57)

An examination of the history of motivation revealed that the significance of the motivation construct was acknowledged in the 1940s and 1950s. However, Schunk (2000) argued, "The field of motivation is beset with a lack of clear definition of motivational constructs and specification of their operation within larger theoretical frameworks. These problems have implications for interpretation of research results and applications to practice" (p. 116).

Huitt (2007) reported that Abraham Maslow (1954) attempted to synthesize a large body of research related to human motivation. Before Maslow, researchers looked on individual factors such as achievement, biology, or power to explain what directs, energizes, and sustains human behavior (Huitt, 2007).

Huitt (2007) explained that Maslow posited a hierarchy of human needs based on two groupings: deficiency needs and growth needs. Within the deficiency needs, each

lower need must be met before moving to the next higher level need (Huitt, 2007, p. 1). Maslow (1943, 1970) explained that humans tend to take care of their basic needs before trying to satisfy other needs, such as love and self esteem. He formed a hierarchy of needs in the form of a triangle to simplify his explanation. The lowest level needs are the physical needs which include satisfying hunger and other physical comforts. The next levels of needs are the needs for safety and the avoidance of dangerous situations. These needs are followed by the need to feel love and to be a part of something. Once these needs are satisfied, humans attempt to satisfy the need for self esteem. Humans can only move to a higher level need when all lower level needs are satisfied. The highest level of need is self-actualization. Maslow explained that few reach or remain at the highest level (Maslow, 1943, 1970). Maslow's work fueled a growing interest in research on motivation and learning. Huitt (2007) commented, "In subsequent years, Maslow and Lowery made significant improvement to his hierarchy of needs" (p. 1).

The social learning theory proposed by Albert Bandura (1969) has become perhaps the most influential theory of learning and development. While rooted in many of the basic concepts of traditional learning theory, Bandura believed that direct reinforcement could not account for all types of learning.

His theory was contrary to the theories proposed by B. F. Skinner and Ivan Pavlov. Skinner developed the theory of operant conditioning. His theory focused on the use of positive and negative rewards and punishments to facilitate learning while Ivan Pavlov developed classical conditioning also known as a learned response.

Bandura's theory added a social element, arguing that people can learn new information and behaviors by watching other people. Known as observational learning (or modeling), this type of learning can be used to explain a wide variety of behaviors.

There are three core concepts at the heart of social learning theory. First is the idea that people can learn through observation. Next is the idea that internal mental states are an essential part of this process. Finally, this theory recognized that just because something has been learned, it does not mean that it will result in a change in behavior.

Gollwitzer and Oettinger (2001) commented:

More recently, the motivational importance of control beliefs has been analyzed. According to Bandura's (1997) self-efficacy theory, self-efficacious individuals hold the firm belief that they possess the potential to execute (i.e., control) the kinds of behaviors that a given task demands. People acquire such beliefs by reflecting on their own relevant past behaviors, observing the behavior of similar others, being evaluated by significant others (e.g., teachers), and observing their own physiological reactions when challenged by a given task. High self-efficacy beliefs are associated with choosing aspiring goals, exerting strong effort to attain these goals, and persisting in the face of obstacles and hindrances (pp. 10110-10111).

In summarizing 20 years of research in the area of motivation in mathematics education, James A. Middleton and Photini A. Spanian found five main factors that influence motivation: "First, motivation or lack of motivation is learned. Second, motivation hinges on students' perception of their abilities to succeed or fail. Third, intrinsic motivation is better than a reward. Fourth, inequities are influenced by how different groups are taught to view mathematics. Fifth, teachers do matter" (as cited in Huetinck and Munshin, 2011, p. 1). Bandura's work on self-efficacy (1977, 1982, 1997) was supported by the findings of Middleton and Spanian as a result of their decade-long studies on motivation.

Summary of the Learner-Centered Psychological Principles. Over 15 years of research supports the LCPPs (APA, 1993, 1997; McCombs & Miller, 2009). McCombs and Miller (2009) concluded that the model of education currently in place is fundamentally flawed; it is based on outdated assumptions about human capacity and evidence-based natural learning principles. The consequences are that this current model deprives students of the information and skills necessary to live meaningful lives as productive citizens in a global community.

McCombs and Miller (2009) argued, “Shifting from the current industrial model of education will require visionary leaders who are dedicated to transforming schools into continuously evolving systems that are suited to the needs of a rapidly changing world” (p. 2).

Experimental/Quasi-Experimental Research

With that in mind, the research described examined the effectiveness of learner-centered practices by teachers in individual classrooms and schools. As a result of the information obtained, the review of research described below is presented in the following sections: Learner-centered Battery and a summary of the Learner-Centered Battery.

Learner-Centered Battery

The Learner-Centered Battery was developed based on the LCCPs (APA, 1997). McCombs and Miller (2009) noted the following:

Members of the APA Task Force working on the Learner-Centered Principles believed the psychology, as a scientific field that has studied learning for over 100 years, had a responsibility to clearly present to educators and policy makers it accumulated and research-validated knowledge about learning and learners. . . .

Based on years of research, the Learner-Centered Principles were adopted by the APA, as a definition of the psychological principles with the greatest positive effect on learners and learning. (p. 28)

McCombs and Miller (2009) also reported,

The qualities related to being perceived by students as engaging in high levels of learner-centered practice include:

- Higher learner-centered beliefs (consistent with the APA principles) versus low non-learner-centered beliefs (more traditional);
- High levels of self-efficacy about their ability to reach and teach diverse learners;
- High reflective self-awareness; and
- High degree of support autonomy. (p. 35)

Initially the researchers developed a two-phase validation process in order to establish the construct and predictive validity of teacher and student variables as they pertain to measure of student motivation and achievement (McCombs, Lauer, & Peralez, 1997).

McCombs et al. (1997) reported, “Phase one results indicated moderate to high internal consistencies (alpha coefficients ranged from .67 to .96) and factor structures were conceptually consistent with the theoretical framework used in the development of the Learner-Centered Battery” (p. 27). The researchers determined that the results showed promise, and they were pleased to note the empirical finding confirmed the theoretical relationships between teacher beliefs and practices (McCombs et al., 1997).

Phase two validation efforts examined the relationships between indicators of “learner-centeredness” as measured by the LCB surveys and measures of student

achievement and motivation (McCombs et al., 1997).

McCombs et al. (1997) contended:

The results of the validation studies completed with the LCB point to its usefulness as a self-assessment and reflection tool for teachers to identify (a) students who are not perceiving positive classroom practices in the four domains assessed by the teacher and student perceptions of classroom practices surveys and (b) potential classroom changes that can help reach all students. (p. 41)

McCombs et al. (1997) reasoned, “The researchers suggest that the assessment and feedback tools help teachers reflect on and change their classroom practices, as well as identify personalized staff development needs” (p. 4).

McCombs et al. (1997) confirmed:

The validation process for the Learner-Centered Battery included collecting survey data from 4,828 student and 672 teachers. As a result of the validation process, the LCB consists of a 35 item brief survey that is divided into two parts to measure teacher beliefs and assumptions and teacher perceptions of classroom practices Based on the following three factors: 1) Learner-centered beliefs about learner, learning, and teaching; 2) Non-learner-centered beliefs about learners; and 3) Non-learner centered beliefs about learning and teaching. (p. 27)

McCombs and Miller (1997) explained that “the Assessment of Learner-Centered Practices (ALCP) is a self-assessment and reflection instrument tool for maximizing student motivation, learning and achievement created as a direct result of the Learner-Centered Psychological Principles developed by the APA in 1993” (p. 35). They stated that ALCP surveys were used to collect data from over 35,000 students and teachers (McCombs & Miller, 2009). Data collection efforts using the ALCP are ongoing.

McCombs and Miller (2009) contended, “when translated into practice, the Learner-Centered Model consists of a variety of materials, guided reflection, and assessment tools that support the teacher and administrator effectiveness and change at the individual and school levels” (p. 35). The intent of the guided reflection process is to help teachers improve student achievement by helping them reflect on the following three factors: a) teacher perceptions of their learner-centered practices, b) student perceptions of their teachers’ learner-centered practices, and c) the implications of both teacher and student learner-centered variables on student motivation and achievement (McCombs et al., 1997). As teachers become more comfortable using the learner-centered principles, they will: 1) Take into account the unique and diverse needs and styles of their students; 2) Ensure that students are often involved in the selection and planning of lessons, assignments, and even units of study; and 3) Assess in a variety of ways (McCombs & Whisler, 1997).

McCombs et al. (1997) explained:

The ALCP is part of a self-assessment and reflection system that was specifically developed to help teachers and administrators become more aware of and reflective about (a) their basic beliefs, and assumptions about teachers, learners, learning, and teaching; (b) the relationship of these beliefs to their school and classroom practices, from both their own and their students’ perspectives; and (c) the impact of these practices on students motivation, learning, and academic achievement. Ultimately, these tools can become the basis for personalized professional development planning by both teachers and administrators. (p. 8)

ALCP surveys examine teachers’ beliefs and practices. Consequently, a belief or teaching practice can be classified as learner-centered or non-learner-centered. These

classifications do not apply to a teacher (McCombs & Lauer, 1997; McCombs, 2003).

As such, these concepts are difficult to roll into any course of study or extend to an entire educational program.

McCombs and Whisler (1997) found, “the teachers who are more learner-centered are more successful in engaging more students in an effective learning process and are more effective learners themselves and happier with their jobs” (p. 24). They added, “As a result of having learner-center beliefs, characteristics, and dispositions, learner-centered teachers naturally and often intuitively engage in practices that honor the learner-center model” (McCombs & Whisler, 1997, p. 83). McCombs and Stiller (1995) noted that

It is important to define and help teachers become more aware of those beliefs and assumptions about learners, learning and teaching that are consistent with an instructional orientation towards the *learner’s needs, capabilities and perspectives* and toward learning as a process of personally constructing meaning. (p. 87)

Murphy and Rodriguez-Manzanares’ (2008) study, “High School Teachers’ Beliefs about Learner-Centered E-Learning,” identified three sets of beliefs that relate to learner, teachers, or technology as follows:

1) Learners are digital natives who consume information and knowledge, engage emotionally, with technology and devote themselves to it; 2) Teachers are guides and mediators in the knowledge process; 3) Technology (in particular) offers an opening of the world . . . it supports various learning styles, strengths and intelligences. (p. 392)

Meece, Herman, and McCombs (2003) conducted a survey, which applied the learner-centered principles to 4,615 middle and high school students using an

achievement-goal framework, and their findings, “reported stronger mastery and performance goals when they perceived their teachers as using learner-centered practices that involved promoting positive relations, encouraging high order thinking, and adapting instruction to individual needs” (p. 457).

Summary of the Learner-Centered Battery

To illustrate, McCombs et al. (1997) explained, “the Assessment of Learner Centered Practices Survey (ALCPs) are a short set of self-assessment tools for teachers and their students that can help teachers identify profiles of effective beliefs, practices, and discrepancies between teacher and student perspectives” (p. 4). McCombs and Miller (2009) reflected:

In our more than 15 years of research with the Learner-Centered Model and its associated tools, we have verified the benefits of learner-centered practices at the school and classroom levels. Research with the ALCP self assessment surveys for teachers and students confirm that “learner-centeredness” is not solely a function of particular instructional practices or programs. Rather, learner-centeredness is a complex interaction of the programs, practices, policies, and people as perceived by the individual learners. (p. 35)

Studies support the premise that certain levels of student achievement are associated with learner-centered principles (McCombs, 2002; McCombs & Lauer, 1997, 1998; McCombs & Whisler, 1997; Meece, 2003; Meece, Herman, & McCombs 2003; Murphy & Rodriguez-Manzanares, 2008; Weinberger & McCombs, 2001).

Teacher Effectiveness

Computers are being used in classrooms in ever increasing numbers. Fulton (1999) remarked,

Computer assisted instruction offers teachers the opportunity to use computers as electronic worksheets, but these "super worksheets" provide immediate feedback to the learner, with the added benefit that the grading is done by the machine, not the teacher. Furthermore, [Computer Assisted Instruction] CAI programs can be individualized and adjusted, often automatically, for the individual student and his or her progress, and correlated to content and question formats matching those on the district and state achievement tests that have become a major force around which much of today's classroom teaching is directed. (p. 10)

McCombs (2000) stated, "Those working closely with technology and its impact on learning are increasingly recognizing that the search for the impact of technology cannot be separated from the key role of humans in the process" (p. 10).

McKeachie, Pintrich, Lin, and Smith (1987) reported,

Among the most important characteristics of effective teachers were high levels of interaction with students outside the classroom, striving to make courses interesting, using frequent examples and analogies in teaching, referring to contemporary issues, and relating content to other fields of study. The characteristics identified fit well with other data from research on student ratings of teaching as related to student learning. (p. 83)

McCombs (2000) added, "In addition to having certain beliefs about learners and learning, research shows that learner-centered teachers tend to have some general characteristics and dispositions in common" (p. 9). At the high school level, the importance and effects of learner-centered practices increase (McCombs & Miller, 2009).

Guskey (1987) conducted an exploratory study designed to investigate the relation between elementary and secondary teacher perceptions. He collected data via a

questionnaire from 120 teachers who completed staff development training that focused on mastering learning instructional strategies. He reported, “Results showed that measures of teacher efficacy, teaching affect, and teaching self-concept were significantly related to teachers' attitudes regarding the congruence, difficulty of use, and importance of the recommended practices” (Guskey, 1987, p. 3). The data clearly indicated student performance is impacted by teacher attitudes.

The effective schools movement is over 30 years old. Lezotte (2012) reflected on the work of Ron Edmonds and commented,

The researchers found that all of these especially effective schools had strong instructional leadership, a strong sense of mission, demonstrated effective instructional behaviors, held high expectations for all students, practiced frequent monitoring of student achievement, and operated in a safe and orderly manner. (p. 2)

As a consequence of further research, Lezotte (2012) explained,

Other aspects of the Effective Schools Movement have evolved over the years as well. The early definition of effective schools rested on the concept of equity between children from differing socioeconomic classes. As educators became concerned about equity among other subsets of the population, gender, ethnicity, disabilities, and family structure were added to the mix. Furthermore, the early definition was cast in terms of mastery of essential curriculum, i.e., reading and arithmetic. (p. 8)

Beagle (2012) developed the *Building Blocks from A to Z* in order to help others educating students recover from generational poverty. According to Beagle (2012), “The ABCs of this effort include: a) High clear expectations. Expect all kids to learn; b)

Recognize that motivation differs between social classes; c) Meaningful assessment” (p. 1). There are several studies that show the correlation between teacher expectations and student achievement in math courses (Manouchehn, 1997; Odom, Stoddard, & LaNasa, 2007; Lloyd, 1999; Charalambous & Philippou, 2010).

Recent education reform policies and laws focus on standardized testing and accountability at the state, district, and school levels (Zhao, 2009). One must consider the role of the teacher in the midst of the current education reform efforts (Handal & Herrington, 2003). For this reason, the Council of Chief State School Officers (CCSSO) created the Interstate New Teacher Assessment and Support Consortium (InTASC), which in 2011 introduced a new and improved collection of 10 standards specifically designed to improve the teaching profession and subsequently improve student achievement. The CCSSO (2011) claimed,

These standards embrace this new emphasis and describe what effective teaching that leads to improved student achievement looks like. They are based on our best understanding of current research on teaching practice with the acknowledgment that how students learn and strategies for engaging learners are evolving more quickly than ever. (p. 3)

Of particular importance is Standard 9 regarding professional learning and ethical practice, which expects teachers to demonstrate the ability to evaluate their teaching practices and how they impact student achievement (CCSSO, 2011).

Lachat (2001) commented,

Putting student learning at the center of school accountability requires the capacity to access and use data to monitor student performance and to evaluate the extent to which new structures and approaches to curriculum, instruction, and

assessment result in higher levels of achievement for students. The capacity to use data thus becomes a key element in achieving the goals of school reform. (p. 16)

Recently, a national emphasis on using data for decision making solidified and emphasized the need for changes in American high schools and encouraged recommendations made by Lachat (2001) in *Data Driven High School Reform: The Breaking Ranks Model*, who argued,

The philosophy behind data driven inquiry in school reform efforts is that results for students will not improve unless the results are directly addressed. It grows from a belief that school staff must look at and be guided by the results they produce in their students. (p. 19)

Beginning with *A Nation at Risk* in 1983 and followed by No Child Left Behind (NCLB, 2002), there was an emphasis on the decline of the American education system. The approach to school improvement was, in part, to tighten accountability measures. Tyack and Cuban (1995) suggested, “Reformers today need to focus on ways to help teachers improve instruction from the inside out instead of decreeing change by remote control, and also to keep in mind the democratic processes that guide public education” (p.186). While national reform efforts focused on changing curriculum and accountability measures, the North Carolina Department of Public Instruction (NCDPI) reform efforts included targeting teacher effectiveness. This led to the introduction of a new teacher evaluation instrument in an effort to improve teacher effectiveness (Public Schools of NC State Board of Education/DPI, 2011 d). The creation of Professional Learning Communities (PLC) is just one of the strategies used to improve teacher effectiveness and student outcomes. While a clear definition of a PLC is not widely accepted, PLCs are given credit for teacher and school improvement (Eaker et al., 2002;

Hoard, 1997).

In the publication *Professional Learning Communities: Communities of Continuous Inquiry and Improvement*, Hoard (1997) noted that there was no universal definition of a PLC. Based on an extensive literature review of the subject Hoard (1997) reported:

Conceptualized professional learning communities as schools in which the professional staff as a whole consistently operated along five dimensions: (1) supportive and shared leadership, (2) shared values and vision, (3) collective learning and application of learning (formerly identified as collective creativity), (4) supportive conditions, and (5) shared personal practice. (p. 4)

Learner-centered practices need to be reflected in the beliefs, characteristics, dispositions, and practices of teachers. This is a continuous process for teachers to follow in order to improve student achievement. Previous national reform efforts did not take into account the individual needs of students and what motivates them to learn (McCombs & Whisler, 1997; McCombs, 2003). The focus of learner-centeredness is exemplified in the revised model of the InTASC core standards.

An examination of the 10 core InTASC standards revealed that six of the standards have direct correlations to the beliefs, expectations, and motivations of teachers on student learning. The CCSSO (2011) reiterated that teachers are responsible for the learning of all students. Each of the standards is divided into three areas: performances, essential knowledge, and critical dispositions. The CCSSO (2011) introduced the updated standards. They specified what a teacher must know and be able to do when functioning as reflective practitioners. These standards outline the common principles and foundations of teaching practice that cut across all subject areas and grade levels and

are necessary to improve student achievement. More importantly, these Model Core Teaching Standards articulate what effective teaching and learning looks like in a transformed public education system. Thus, the experts at McREL (2011) summarized,

The updating of the core teaching standards was driven not only by new understandings of learners and learning but also by the new imperative that every student can and must achieve to high standards. Educators are now being held to new levels of accountability for improved student's outcomes. (p. 3)

As mentioned earlier, NCDPI reform efforts focused on teacher effectiveness. McREL created the new North Carolina Teacher Evaluation Instrument that is closely correlated to InTASC standards. Standard V of the Teacher Evaluation Instrument examines how teachers reflect on their practice (Public Schools of NC State Board of Education/DPI, 2011c). Thus, this standard coincides with the fifth core proposition of the National Board for Professional Teaching Standards (NBPTS) (2002), which states, "Teachers are members of learning communities" (p. 4). Since the creation of the NBPTS in 1987, North Carolina leads the nation with 19,193 teachers earning their National Board Certification (NBPTS, 2012). Consequently, Charlotte-Mecklenburg Schools are ranked third nationally with a total of 1,854 National Board Certified Teachers (NBCTs) as of 2011 (NBPTS, 2012).

Researchers from the Charlotte-Mecklenburg Schools' (CMS) Center for Research and Evaluation studied the effects of how National Board Certified teachers impacted student performance (CMS, 2010). The researchers collected longitudinal data files on students and teachers from the 1998 through 2009; this included the records of 1,056 teachers. They "explored the impact of National Board Certification in EOC tested courses, examined whether NBCT certification type influenced effectiveness and looked

at teacher effectiveness for NBCTs before, during, and after certification” (CMS, 2010, p. 15).

The results indicated “NBCTs were significantly more effective than their non-NBCT counterparts in several EOC tested courses (Algebra II, Biology, Civics and Economics, Chemistry, and Geometry), while no differences were found between teacher type on others (e.g., English I, Algebra I)” (CMS, 2010, p. 15). Possible reasons for the lack of differences could rely, in part, on factors that are not a part of the national board certification process, such as student engagement and classroom management.

Summary of Literature Review

The review of the literature coincided with the three levels of research prescribed by Gersten (2009) and ends with sections containing a purpose statement, the hypothesis statements, and a collection of research questions. The review of the research contained a) a historical overview of the LCPPs as well as the development and validation process involved, and b) a review of educational psychology and student achievement followed by a summary of the foundations of the LCPPs (APA, 1993, 1997; McCombs, 1999, 2001; McCombs et al., 1997; McCombs & Whisler, 1997).

A review of the experimental and quasi-experimental research followed. It included a discussion of the Learner-Centered Battery, assessment of learner-centered practices, and the Learner-Centered Psychological Principles (APA, 1993, 1997; McCombs, 1997, 1999, 2001, 2003; McCombs & Lauer, 1997; McCombs & Whisler, 1997) and student achievement (McCombs & Lauer, 1997; McCombs & Whisler, 1997; McCombs, 2002; Meece, 2003).

As a result of the descriptive and experimental/quasi-experimental research, a review of the large-scale research is not possible simply because LCPPs are not a part of

a structured program that can be evaluated with this type of research. For this purpose, descriptive and experimental/quasi-experimental research provides a simplified view of the learner-centered principles described by Gersten's (2009) explanation of large-scale research. At this time, questions about teacher learner-centered beliefs and practices have not been correlated with student achievement data by North Carolina EOC assessments for classes conducted in the North Carolina Virtual Public School. As presented in a study conducted by McREL (2011):

Teachers have the greatest influence on student learning. But determining teacher effectiveness requires more than a simple checklist of do's and don'ts that fails to account for the depth and quality of teacher performance. Therefore, today's educators require new tools to effectively navigate the complexities of teaching and learning. McREL's teacher evaluation system is a holistic evaluation of the teacher's contribution to the school, school district, and most importantly, student learning. Educators are now being held to new levels of accountability for improved student's outcomes. (p. 3)

As mentioned earlier, NCDPI reform efforts focused on teacher effectiveness. McREL created the new North Carolina Teacher Evaluation Instrument that is closely correlated to InTASC standards. Standard V of the Teacher Evaluation Instrument examines how teachers reflect on their practice (Public Schools of NC State Board of Education/DPI, 2011d).

Purpose Statement

The purpose of this study was to examine the relationship of learner-centered beliefs of NCVPS teachers and their students' performances on the North Carolina End-of Course (EOC) assessments. Quantitative data came from the North Carolina EOC

Assessment scores for Algebra I, Biology, and English I and from the data collected from the Teacher Beliefs Survey. The NCVPS is a single entity that represents locations throughout NC's 100 county school districts and 15 city school districts. Private and Charter schools were not included in this study.

There has not been a study in North Carolina that examined how teachers' learner-centered beliefs impacted student achievement. This study represents one step towards laying the groundwork for future studies in all the schools in this state as well as the rest of the national online learning environment.

Hypotheses

As a result of the literature review, the following hypotheses emerged.

The first hypothesis was that school sites that have a higher percentage of students meeting or exceeding Level III or Level IV on the EOC assessments in Algebra I, Biology, or English I have learner-centered online teachers. The second hypothesis was the lower percentage of students meeting or exceeding the Level III or Level IV on the EOC assessments in Algebra I, Biology, or English I have non-learner-centered online teachers. The third hypothesis was that there is a stronger or higher correlation between student performance on EOC assessments in Algebra I, Biology, or English I with teachers with learner-centered beliefs. The fourth hypothesis was that there is a stronger or higher inverse correlation between student performance the EOC assessments in Algebra I, Biology, or English I with online teachers with non-learner-centered beliefs.

Research Questions

This study used the Learner-Centered Battery to collect data. This battery contains 35 survey questions that serve two unique purposes. Any possible differences of algebra teachers were examined by questions in the first category. The final part of the survey examined relationships of learner-centered algebra teachers and student achievement on the NC EOC assessments. The research questions were:

1. What is the level of learner-centered beliefs of NCVPS Algebra I, Biology, or English I teachers?
2. Is there a difference in the level of learner-centered beliefs and non-learner-centered beliefs about the learner, teaching, and learning of NCVPS teachers and student performance on the EOC assessments in Algebra I, Biology, or English I?
3. Is there a difference in the level of learner-centered beliefs about the learner between teachers with a higher percentage of students who met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I?
4. Is there a difference in the level of non-learner-centered beliefs about the learner between teachers with a higher percentage of students who met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I?
5. Is there a difference in the level of non-learner-centered beliefs about teaching and learning between teachers whose students met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I?
6. What is the relationship of learner-centered beliefs and the level of

performance on the EOC assessments in Algebra I, Biology, or English I?

Chapter 3: Methodology

General Design

Unlike previous research on school reform that has tended for the most part to address technical and organizational changes in our system, this study sought to ascertain differences and relationships between learner-centered beliefs and student achievement. Researchers at the Mid-continent Regional Educational Laboratory (McREL) identified an additional domain of reform that, in their estimation, has seldom, if ever, been studied. That domain included defining and examining teacher beliefs and practices considered learner-centered and the degree to which student achievement, motivation, and learning is influenced. Intuitively we know that beliefs influence behavior.

Participants

The participants included 31 (N =31) teachers of which 27 (n = 27) completed the Teacher Beliefs Survey (see Appendix B). The NCDPI's ABCs accountability model served as the basis for participant selection. Student scores were derived from NCVPS EOC data. Performance is reported by performance level in accordance with NCDPI EOC reporting guidelines (NC State Board of Education/DPI, 2004). The majority of teachers were female (83.9%) and Caucasian (87.1%). Twelve (n =12) teachers were in the most common age ranges of 41+ years (38.7%) and nine (n = 9) teachers were in the 31-35 years age range (29.0%). The majority of teachers held an MA or MS degree (67.7%), with the most common majors being Language Arts (38.7%) and Mathematics (35.5%). The majority of respondents had 10-15 years of experience (38.7%) or 5-9 years of experience (35.5%) (see Table 1).

Table 1

Frequency Distribution of Study Variables

Variable	Frequency	Percent
<u>Sex</u>		
Male	3	9.7
Female	26	83.9
<u>Race</u>		
Caucasian American	27	87.1
African American	1	3.2
<u>Age</u>		
26-30	2	6.5
31-35	9	29.0
36-40	7	22.6
41+	12	38.7
<u>Highest Degree Earned</u>		
BA/BS	8	25.8
MA/MS	21	67.7
Ed.D/Ph.D	2	6.5
<u>Major</u>		
Other	1	3.2
Mathematics	11	35.5
Science	7	22.6
Language Arts	12	38.7
<u>Year Teaching</u>		
1-4	1	3.2
5-9	11	35.5
10-15	12	38.7
16-23	1	3.2
24+	6	19.4

Note: Percentages may not add up to 100% because of missing responses.

Instrument

The Teacher Beliefs Survey. The data collection tool used in this study is a two-part survey; Part I gathered demographic and background information, and Part II contained the Teacher Beliefs Survey.

Part I: Demographic and Background Information. In this part, teachers were asked to list the following: 1) the major area of teaching preparation; 2) the minor area of teaching preparation; 3) the highest degree earned; 4) the total numbers of years teaching Algebra I, Biology or English I; 5) the total number of years teaching high school Algebra I, Biology or English I; and 6) the total number of years teaching. The survey instrument requested that teachers provide optional demographic information such as age, gender, and race.

Part II: The Teacher Beliefs Survey. The Teacher Beliefs Survey evolved from the Learner-Centered Battery (LCB) of surveys (McREL, 1994). McCombs et al. (1997) reported,

The validation of the LCB was conducted in two phases. Phase I focused on establishing the content validity and internal reliability of teacher and student surveys included in the LCB. Phase II focused on replicating Phase I results and also on establishing the measures of student motivation and achievement. (p. 20) McCombs et al. (1997)

referred to teacher beliefs and assumptions by stating that the resulting survey had 35 items divided into three subscales (1) Learner-Center Beliefs about Learners, Learning and Teaching (14 Items, $\alpha = .87$); Non-learner-Centered Beliefs about learners (9 items, $\alpha = .83$); and (3) Non-learner-Centered Beliefs About Teaching and Learning (12 items, $\alpha = .82$). (p. 23)

McCombs et al. (1997) concluded,

In other words, the Phase II validation focused on determining the relationships between indicators of “learner-centeredness” (i.e., teacher’s beliefs, teacher classroom practices, students perceptions of classroom practices, discrepancies between teacher and student perceptions of classroom practices). As assessed by the LCB surveys and measures of student motivation and achievement. (p. 24)

North Carolina End-Of-Course Algebra I Test

The North Carolina EOC test of Algebra I assesses the Algebra I goals and objectives of the *North Carolina Mathematics Standard Course of Study* (adopted in May 1998). On the test, students are expected to demonstrate knowledge of important principles and concepts and relate mathematical information to everyday situations. In order to align with the mathematics curriculum’s focus on inquiry, instruction, and higher-order thinking, the EOC Algebra I test has increased focus on processing information and higher-order thinking skills.

The EOC Algebra I test consists of 80 multiple-choice questions administered during a fixed block of time within the last week of school (block schedule or summer school) or during the last two weeks (traditional schedule) of the course. Three equivalent forms are administered in each class to provide a breadth of information for curriculum evaluation and planning.

The scores on the EOC Algebra I tests are reported as scale scores and achievement levels. The scale used was designed to have a range of 20 to 80 with a mean of 50 and a standard deviation of 10. The use of scale scores provides for easier and more consistent interpretations of the results from test to test. The use of achievement levels provides an interpretation of student performance relative to a pre-determined standard.

The four achievement levels are typically established by linking teacher judgments to the performance distribution of student scores from the field test or the first operational administration of the test. Detailed descriptions of the achievement levels for the North Carolina EOC Test of Algebra I (see Appendix C) illustrate the proficiency levels and scale score ranges. This study considers students as proficient or not proficient based on their results on the NC Algebra I EOC assessment. Students who score below 148 are considered not proficient, and students who score 148 or higher are considered proficient (NC State Board of Education/DPI, 2004).

North Carolina End-Of-Course Biology Test

The North Carolina EOC Test of Biology assesses the biology goals and objectives of the *North Carolina Biology Standard Course of Study* (adopted in 2004). On the test, students are expected to demonstrate knowledge of important principles and concepts, understand and interpret laboratory activities, and relate scientific information to everyday situations. In order to align with the curricular focus on inquiry instruction and higher-order thinking, the revised Biology EOC tests have a concentration on processing information, understanding the relationship between science and technology, and knowing scientific concepts.

Each student's Individual Student Report (ISR) reported a scale score, achievement level, and achievement level descriptor for the Biology EOC test performance. The scale used had a range of approximately 120-180 with a mean of 150 and a standard deviation of 10. The use of scale scores provided easier and more consistent interpretations of the results from test to test. Achievement levels are also generated to provide an interpretation of student performance relative to a predetermined standard. Achievement level descriptors are provided to describe typical student

behaviors relative to curricular expectations as measured by the Biology EOC tests. Student scores are converted to one of the four achievement level categories (see Appendix C). The four achievement levels are typically initially established by linking teacher judgments to the performance distribution of student scores from the first fall operational administration of the test. This study considered students as proficient or not proficient based on their results on the NC Biology EOC assessment. Students who scored below 147 were considered not proficient and students who scored 147 or higher were considered proficient (NC State Board of Education/DPI, 2004).

North Carolina End-Of-Course English I Test

The English I EOC Test assesses the goals for English I described in the North Carolina *Standard Course of Study*. The test consists of two separate sections: composition and textual analysis. The composition section, Part 1, contains four student draft papers with five to eight associated questions for each, for a total of 28 questions. The student draft papers represent expressive, informational, argumentative, or critical text modes of writing. Students are asked to read the student drafts and respond to related questions about editing and composition. The textual analysis section, Part 2, contains seven literary selections and 52 questions. The selections include poetry; informational, fictional, or expressive nonfiction texts; and either an argumentative or critical text. Each selection is followed by six to nine associated questions. The students are asked to answer related questions in which they must analyze the text for general comprehension as well as author's craft and strategies.

A multiple-choice test, the North Carolina EOC Test of English I has 56 operational items and 24 embedded field-test items for a total of 80 items. The embedded field-test items are not included in the student score. The test is administered within a

fixed block of time, not to exceed 4 hours, within the last 10 days (traditional) or 5 days (semester) of the course. This study considered students as proficient or not proficient based on their results on the NC English I EOC Assessment. Detailed descriptions of the achievement levels for the North Carolina EOC Test of English I (See Appendix C) illustrate the proficiency levels and scale score ranges. Students who scored below 146 were considered not proficient and students who scored 146 or higher were considered proficient (NC State Board of Education/DPI, 2004).

Procedures

From the pool of current NCVPS teachers who taught Algebra I, Biology and English I, a representative sample of 31 ($N = 31$) teachers were selected to participate in the study. Each participant received an electronic mail message inviting them to participate in the study. The message fully explained the purpose of the study and how the results and subsequent recommendations will be released and distributed. The message directed the participants to follow an embedded electronic link to a web base survey site. The participants received a time frame for completing the survey.

Data analysis. Descriptive statistics were used to analyze data collected from the Teacher Beliefs Survey. The results of the 2010-2011 EOC assessment for Algebra I, Biology, and English I scores were the dependent variables. The results are reported in Chapter 4. The Statistical Package for Social Sciences (SPSS) (Bain, 2008) was used to perform the statistical analysis. The data were analyzed using the following methods. The Analysis of Variance (ANOVA) was used to test mean differences within and between two or more groups. Specifically, the ANOVA test examined the following: a) Teacher results within the school; b) Teacher results within each category; and c) The results of the interactions and significance between both categories mentioned previously.

were significant statistically. Independent measures *t*-tests were used to test if and to what extent differences existed between means. The Pearson Product-Moment Correlation Coefficient was administered to test if and to what extent relationships between or within variables were to be determined.

Descriptive statistics. McCombs et al. (1997) reiterated that the Teacher Beliefs Survey had 35 items divided into three subscales. The responses were calculated using measures of central tendency and measures of variability by descriptive statistics to report a total score for each factor. A four-point Likert scale was utilized to calculate Factor 1: Learner-Centered Beliefs about Learners, Learning, and Teaching (14 Questions, $\alpha=.87$), with possible scores ranging from 14 to a maximum of 56; Factor 2: Non-Learner-Centered Beliefs About Learning (9 Questions, $\alpha=.83$), with possible scores ranging from 12 to a maximum of 36; and Factor 3: Non-Learner-Centered Beliefs About Learning and Teaching (12 Questions, $\alpha=.82$), with possible scores ranging from 9 to a maximum of 36 (McCombs et al., 1997). In order to assess the internal consistency reliability of these three factors, Cronbach's alpha coefficients were computed. Cronbach's Alpha Index is used to determine the correlation between test items; it was used as an index of reliability. Alpha scores ranged between 0 and 1.

An average score (mean) for each factor was calculated after all of the scores were tallied. The validation mean score for each factor was determined by McCombs and Whisler (1997) as: Factor 1 - 3.22, Factor 2 - 2.28, and Factor 3 - 2.31.

As a result, McCombs and Whisler (1997) determined that teachers are considered teachers with learner-centered beliefs when their mean survey scores are >3.4 for Learner-Centered Beliefs, Non-Learner-Centered Beliefs about learners survey scores have a mean of < 2.0 , and Non-Learner-Centered Beliefs about teaching and

learning mean survey scores are <2.0 .

In contrast, McCombs and Whisler (1997) considered teachers with non-learner-centered beliefs teachers whose survey scores depicted a mean < 2.8 for Learner-Centered Beliefs, Non-Learner-Centered Beliefs about learners have a mean > 2.4 , and Non-Learner-Centered Beliefs about teaching and learning mean survey scores are >2.4 .

The Teacher Beliefs Survey includes several questions that are designed to determine the level of teacher preparation as well as the years of teaching experience. The survey also includes a few optional questions, which ask the participant to list age (in ranges), ethnicity, and gender.

Furthermore, while the study investigated relationships, it contained several survey items that relate to differences. For these reasons, an ANOVA test examined the means between groups. By definition, an ANOVA “is a general technique that can be used to test the hypothesis that the means among two or more groups are equal, under the assumption that the sampled populations are normally distributed” (NIST/SEMATECH e-Handbook of Statistical Methods, 2012).

According to Gay, Mills, and Airasian (2006), “The concept underlying ANOVA is that the total variation of variance of scores can be divided into two sources—variance between groups and variances within groups” (p. 1).

Kaufhold (2007) concluded, “In order to account for these variances, an F ratio must be formed with the group differences as the numerator (variance between groups) and the variance within groups (error variance) as the denominator” (pp. 81-82).

In summary, the methodology and methods used in this quantitative study examined the relationship of learner-centered beliefs of NCVPS teachers and their students’ performances on the North Carolina EOC assessments. Independent samples *t*-

tests and Pearson Product-Moment Correlation Coefficients were conducted in order to address the study's hypotheses.

Chapter 4: Results

The purpose of this quantitative study was first to establish the learner-centered beliefs of NCVPS instructors in the North Carolina EOC Assessments in Algebra I, Biology, and English I and second to examine if and to what extent a relationship existed between the learner-centered beliefs of NCVPS teachers and student performance on the North Carolina EOC assessments.

To address these objectives, a statistical analysis was conducted on the survey responses obtained from 31 ($N = 31$) teachers from across North Carolina along with the achievement levels of their students. The Teacher's Beliefs Survey was administered to the participants in this study to determine the level of learner or non-learner-centered beliefs about learners, learning, and teaching. Additionally, demographic data were collected, including age, education level of the teacher, and years of teaching experience, to provide a better understanding of the participants.

In this chapter, the results of the data analysis are presented. First, descriptive statistics are presented. Second, the results of Cronbach's alpha coefficients administered to assess the internal consistency reliability of the learner-centered or non-learner-centered beliefs about learners, learning, and teaching are presented. Third, the results of an ANOVA are presented which tested for mean differences within and between instructors in Algebra, Biology, and English. Fourth, the results of independent sample *t*-tests are reported. Fifth, the results of the Pearson Product-Moment Correlational Coefficient are reported. Lastly, this chapter concludes with a summary of results and findings.

The first hypothesis assumed that school sites with a higher percentage of students meeting or exceeding Level III or Level IV on the EOC assessments in Algebra I,

Biology, or English I would have learner-centered online teachers. In order to test this hypothesis, the Teacher Beliefs Survey was administered to 31 ($N = 31$) of the NCVPS teachers who taught Algebra I, Biology, and English I during the 2010-2011 school years. The descriptive statistics on the proportion of students with any of the four levels of proficiencies reported on the North Carolina EOC assessments corresponded to the teachers in the sample.

The overall proportion of students with Level I or II scores on the EOC Assessments was 42.50%; while the overall proportion of students with Level III or IV on the EOC Assessments was 58.04% (see Table 2).

Table 2

Student Levels of Proficiency

Variable	Min	Max	M	SD
Percentage Level of I/II Students	0.00	100.	42.5032	18.72
Percentage Level of III/IV Students	0.00	100.	58.0432	26.18

Research Question 1 asked: “What is the level of learner-centered beliefs of NCVPS Algebra I, Biology, or English I teachers?” McCombs and Whisler (1997) provided the following guidelines to assess the learner-centered or non-learner-centered beliefs of teachers:

In general, teachers with learner-centered beliefs are those with means above 3.4 on factor 1 and below 2.0 on factors 2 and 3. Teachers with non-learner-centered

beliefs are those with means below 2.8 on factor 1 and above 2.4 on factors 2 and

3. (p. 231)

Table 3 presents the average scores for each of the 3 factors for all participants.

Table 3

Learner-Centered Beliefs Means

	LCB	NLCB (Learners)	NLCB (Learning and Teaching)
Teacher	M	M	M
Algebra 1	2.71	1.78	2.5
Algebra 2	3	3.11	2.92
Algebra 3	2.57	2.44	1.92
Algebra 4	3.93	1.44	2.27
Algebra 5	3.29	1.78	2.58
Algebra 6	2.79	3.33	2.75
Algebra 7	2.86	1.33	1.83
Algebra 10	3.36	2.33	2.92
Algebra 11	3.07	2.11	2.5
Biology 1	3.29	1.78	2.75
Biology 2	2.57	2.22	2.67
Biology 3	2.43	2.67	2.08
Biology 4	2.71	2	2.33
Biology 5	3.36	1.44	1.92
Biology 6	2.86	2.11	2.33
English 1	3	2.44	2.33
English 2	3.93	2	2.5
English 3	2.86	1.56	2.25
English 4	2.93	1.89	1.83
English 5	3.64	1.67	1.83
English 6	3.36	2.11	2.58
English 7	3	2.22	2
English 8	2.93	2.11	3
English 9	3.86	2	2.42
English 10	3.5	2	2
English 12	3	1.89	2.42
English 13	3.36	2.11	2.67

McCombs and Whisler (1997) reported that standard deviations for each factor were .40, .56, and .49 for LCB, NLCBL, and NLCBTL, respectively. Table 4 shows that the standard deviations for the sample used in this study were .41, .46 and .35, respectively.

Table 4

Differences Among Teachers on Learner-Centered And Non-Learner-Centered Beliefs

	N	M	SD
LCB	27	3.1164	.41183
NLCBL	27	2.0700	.46137
NLCBTL	27	2.3743	.35431

Only one (n =1) teacher from the sample (English 5) met McCombs and Whisler's (1997) criteria for having learner-centered beliefs. The scores for this teacher are presented in Table 5.

Table 5

Learner-Centered Teachers

	LCB	NLCB (Learners)	NLCB (Learning and Teaching)
Teacher	M	M	M
English 5	3.64	1.67	1.83

Likewise, only one (n = 1) teacher from the sample (Algebra 6) met McCombs and Whisler's (1997) criteria for having non-learner-centered beliefs. The scores for this teacher are presented in Table 6. The rest of the teachers who completed the Teacher

Beliefs Survey did not meet either of the criteria ($n = 25$).

Table 6

Non-Learner-Centered Teachers

	LCB	NLCB (Learners)	NLCB (Learning and Teaching)
Teacher	M	M	M
Algebra 6	2.79	3.33	2.75

An examination of the data revealed that five ($n = 5$) of the 27 ($n = 27$) teachers who completed the Teacher Beliefs Survey (18.51%) had an average LCB score above the validation mean of 3.4. These teachers are presented in Table 7.

Table 7

Teachers Above the Validation Mean for Learner-Centered Beliefs

	LCB	NLCB (Learners)	NLCB (Learning and Teaching)
Teacher	M	M	M
Algebra 4	3.93	1.44	2.27
English 2	3.93	2	2.5
English 5	3.64	1.67	1.83
English 9	3.86	2	2.42
English 10	3.5	2	2

It was also found that five ($n = 5$) of the 27 ($n = 27$) teachers who completed the Teacher Beliefs Survey (18.51%) had an NLCB (Learners) average score above the validation mean of 2.4 (see Table 8). Likewise, 14 ($n = 14$) of the 27 ($n = 27$) teachers who completed the Teacher Beliefs Survey (51.85%) had a NLCB (Learning and

Teaching) average score above the validation mean of 2.4 (see Table 9).

Table 8

Teachers Above the Validation Mean for Non-Learner-Centered Beliefs: Learner

	LCB	NLCB (Learners)	NLCB (Learning and Teaching)
Teacher	M	M	M
Algebra 2	3	3.11	2.92
Algebra 3	2.57	2.44	1.92
Algebra 6	2.79	3.33	2.75
Biology 3	2.43	2.67	2.08
English 1	3	2.44	2.33

Table 9

Teachers Above the Validation Mean for Non-Learner-Centered Beliefs: Learning and Teaching

	LCB	NLCB (Learners)	NLCB (Learning and Teaching)
Teacher	M	M	M
Algebra 1	2.71	1.78	2.5
Algebra 2	3	3.11	2.92
Algebra 5	3.29	1.78	2.58
Algebra 6	2.79	3.33	2.75
Algebra 10	3.36	2.33	2.92
Algebra 11	3.07	2.11	2.5
Biology 1	3.29	1.78	2.75
Biology 2	2.57	2.22	2.67
English 2	3.93	2	2.5
English 6	3.36	2.11	2.58
English 8	2.93	2.11	3
English 9	3.86	2	2.42
English 12	3	1.89	2.42
English 13	3.36	2.11	2.67

The mean findings in this study were lower than those reported by McCombs and Whisler (1997) for Factor 1 ($M = 3.22$) and Factor 2 ($M = 2.280$). Therefore, it was necessary to assess the internal consistency reliability of these three factors. A Cronbach's alpha coefficient was computed. As reported in Table 10, LCB and NLCB exhibited adequate internal consistency reliability with coefficients for LCB (alpha = 0.851), NLCB (alpha = 0.793), and NLCBTL (alpha = 0.686) (see Table 10).

Table 10

Cronbach's Alpha Coefficients for Teacher Beliefs Survey Factors

Variable	Alpha	N Items
Factor 1	.851	14
Factor 2	.793	9
Factor 3	.686	12

Data Analysis

The data analysis section is organized using the five research questions emergent from the four hypotheses including the results for each analysis. Question 2 asked, "Is there a difference in the level of learner-centered beliefs and non-learner-centered beliefs about the learner, teaching, and learning of NCVPS teachers and student performance on the EOC assessments in Algebra I, Biology, or English I?" In order to test this hypothesis, a one-way ANOVA was conducted in order to compare the three Teacher Beliefs Survey factors among the three teacher groups (Algebra I, Biology, and English I). Results of the ANOVA are presented in Table 11. There were no significant differences among the teachers for any of the three factors.

Table 11

One-way ANOVA of TBS Factors by Teacher Group

Variable		SS	df	MS	F	Sig.
Factor 1	Between Groups	.713	2	.356	2.313	.121
	Within Groups	3.697	24	.154		
	Total	4.410	26			
Factor 2	Between Groups	.185	2	.092	.414	.665
	Within Groups	5.350	24	.223		
	Total	5.535	26			
Factor 3	Between Groups	.115	2	.058	.440	.649
	Within Groups	3.149	24	.131		
	Total	3.264	26			

The second hypothesis assumed that the lower percentage of students meeting or exceeding the Level III or Level IV on the EOC assessments in Algebra I, Biology, or English I would have non-learner-centered online teachers. In order to test this hypothesis, Question 3 asked “Is there a difference in the level of learner-centered beliefs about the learner between teachers with a higher percentage of students who met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I?” Consequently, the total score from the Teacher Beliefs Survey was tabulated along with the EOC performance data. An Independent Samples *t*-test was conducted to determine if and to what extent mean

differences existed between students scoring a Level III/IV or Level I/II on the EOC Assessments based on the learner-centeredness of their instructors.

The results of the independent sample t -test ($t(25) = -0.102, p = 0.919$) resulted in Levene's test for equality of means which found that students scoring a Level III/IV had a slightly higher learner-centered teachers than students scoring a Level I/II (see Tables 12 and 13). However, although there was a difference it was not statistically significantly at the $p < .05$ level of significance. Therefore, the independent sample t -test failed to reject the null hypothesis that there was a statistical difference in the level of learner-centered beliefs of NCVPS teachers and student performance on the EOC assessments in Algebra I, Biology, or English I.

Table 12

LCB Scores and t-Test Results by Achievement Group

	Group	N	M	SD	Std. Error Mean
LCB	Level I/II	12	3.1071	.35191	.10159
	Level III/IV	15	3.1238	.46641	.12043

Table 13

LCB Levene's Test for Equality of Variances

	Levene's Test for Equality of Variances		t-test			
	F	Sig.	t	df	Sig. (2-tailed)	
Equal variances assumed	1.796	.192	-.102	25	.919	
Equal variances not assumed			-.106	24.940	.917	

Question 4 continued to test the second hypothesis and asked: “Is there a difference in the level of non-learner-centered beliefs about the learner between teachers with a higher percentage of students who met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I?” Consequently, an Independent Samples *t*-test was conducted to determine if and to what extent mean differences existed between students scoring a Level III/IV or Level I/II on the EOC Assessments based on the learner-centered beliefs of their instructors. The results of the independent sample *t*-test ($t(25) = -0.604, p = 0.551$) resulted in Levene’s test for equality of means, which indicated that students scoring a Level III/IV had a slightly higher learner-centered teachers than students scoring a Level I/II (see Table 14 and 15). However, although there was a difference, it was not statistically significantly at the $p < .05$ level of significance.

Table 14

NLCB and t-Test Results by Achievement Group

	Group	N	M	SD	Std. Error Mean
NLCB	Level I/II	12	3.1071	.35191	.10159
	Level III/IV	15	3.1238	.46641	.12043

Table 15

NLCB Levene's Test for Equality of Variances

	Levene's Test for Equality of Variances		t-test		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.530	.474	-.604	25	.551
Equal variances not assumed			-.584	19.734	.566

Question 5 finished testing the second hypothesis by asking, “Is there a difference in the level of non-learner-centered beliefs about teaching and learning between teachers whose students met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I?” Accordingly, an Independent Samples *t*-test was conducted to determine if and to what extent mean differences existed between students scoring a Level III/IV or Level I/II on the EOC Assessments based on the learner-centered beliefs of their instructors. The findings ($t(25) = -0.505, p = 0.618$) resulted again in Levene’s test for equality of means, which failed to reject the null hypothesis. Results are reported in Tables 16 and 17.

Table 16

NLCBTL and t-Test Results by Achievement Group

	Group	N	M	SD	Std. Error Mean
NLCBTL	Level I/II	12	2.3352	.35491	.10245
	Level III/IV	15	2.4056	.36306	.09374

Table 17

NLCBTL Levene's Test for Equality of Variances

	Levene's Test for Equality of Variances		t-test		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	.035	.852	-.505	25	.618
Equal variances not assumed			-.506	23.943	.617

The third hypothesis made the assumption there is a higher correlation between student performances on the EOC assessments with teachers with learner-centered beliefs. In order to test this hypothesis, Question 6 asked, “What is the relationship of learner-centered beliefs and the level of performance on the EOC assessments in Algebra I, Biology, or English I?” Therefore, Pearson’s Product-Moment Correlation Coefficient was computed between teachers’ LCB and NLCB scores and the teacher’s proportion of students with Level III-IV on the EOC assessment.

Table 18 presents the correlation coefficients among the survey factors. The finding was a positive statistically significant relationship ($r = .0421, p < .05$) between

NLCB and NLCBTL ($r = 0.421$). No other correlations were significant at the 0.05 level.

Table 18

Pearson's Product-Moment Correlation Coefficients Among Factors

	LCB	NLCB	NLCBTL
LCB	1	-.367	.036
NLCB	-.367	1	.421 [*]
NLCBTL	.036	.421 [*]	1

Note: (*) $p < 0.05$.

Question 6 also asked, “If and to what extent is there a relationship between LCB and NLCB and student achievement?” Pearson’s Product-Moment Correlation Coefficient was computed between teachers’ LCB scores and the teacher’s proportion of students with Level III-IV on the EOC assessment. The significance level was set at 0.05. Results are presented in Table 19. The results showed the correlation between teachers’ scores in LCB and the proportion of students with Level III-IV on the EOC assessment was not significantly different from zero ($r = -.034$, $p > 0.05$). The relationship between LCB and students Scoring Level III/IV on the EOC resulted in $r = -.034$, and therefore, failed to reject the null hypothesis.

Table 19

Pearson's Product-Moment Correlation Coefficients Between Teacher's Beliefs and Proportion of Students with Levels I/II and Levels III/IV

Variable	Pearson's Moment Correlation with Percentage Students with Level III/IV	Pearson's Moment Correlation with Percentage Students with Level I/II
LCB	$r = -.034$	$r = .034$
NLCB	$r = .105$	$r = -.105$
NLCBTL	$r = .168$	$r = -.168$

Note: None of the correlations were significant at the 0.05 level.

Hypothesis 4 proposed a higher inverse correlation between student's performances on EOC assessments with teachers with non learner-centered beliefs.

Subsequently, Pearson's Product-Moment Correlation Coefficient was computed between teachers' NLCB and NLCBTL scores, and the teacher's proportion of students with Level III-IV on the EOC Assessment. The significance level was set at 0.05.

The correlation between teachers' scores in NLCB and the proportion of students with Level III-IV on the EOC assessment was not significantly different from zero ($r = .105, p > 0.05$). Likewise, the correlation between teachers' scores in NLCBTL and the proportion of students with Level III-IV on the EOC assessment was not significantly different from zero ($r = .168, p > 0.05$). Therefore, it was not possible to reject the null hypothesis that there is no relationship between student performances on the EOC Assessments with teachers with non-learner-centered beliefs.

Summary of Results

The purpose of this quantitative study was to examine the relationship of learner-centered beliefs of NCVPS teachers and their students' performances on the North

Carolina EOC Assessments in Algebra I, Biology, and English I and to examine if and to what extent a relationship existed between the learner-centered beliefs of NCVPS instructors and student performance on the North Carolina EOC Assessments. The Teacher Beliefs Survey and North Carolina EOC Test results for school years 2010-2011 provided the data for this study

Descriptive statistics examined demographic data while Independent samples *t*-tests, Cronbach's Alpha, ANOVA and Pearson's Product-Moment Correlation Coefficients were conducted in order to address the study's hypotheses. The results showed that there was no statistically significant relationship between learner-centered beliefs and student achievement. Likewise, no statistically significant relationship was found between non-learner-centered beliefs and student achievement.

Chapter 5: Discussion

This chapter is comprised of summary and discussion of results, conclusions, and recommendations. Specifically, Chapter 5 includes the findings and interpretations of results, recommendations, and suggestions for further research. This chapter will provide substance to the results presented in Chapter 4 in relation to the concepts presented in Chapter 1 and in the review of literature in Chapter 2.

Review of the Purpose of the Study

Given the increased popularity of distance learning training methods, further research could help determine which teaching methods are best suited for use in virtual public schools. This study focused on analyzing empirical data gathered from computer-based assessments records as well as surveys of NCVPS teachers. The purpose of this study was to examine the relationship of learner-centered beliefs of NCVPS teachers and their students' performance on the North Carolina EOC assessments. The outcomes of the study were based on quantitative data collected using North Carolina's Algebra I, Biology, and English I EOC assessment scores for the school year 2010-2011 and by using the assessment of the Learner-Centered Practices survey.

Demographic Information

Thirty-one Algebra I, Biology, and English I teachers from the North Carolina Virtual Public School participated in this study. There were a limited number of teachers available from which to collect data. The number of participants invited to participate in this study created a convenience sample. Ouyang (2012) stated, "For causal-comparative, correlational research 30 in each group . . . are generally recommended as minimum sample size" (p. 4). Though this study meets the minimum as defined above, the small size makes the external validity and generalizability questionable. Admittedly,

the extent to which the conclusions from this study can be assumed to accurately reflect the results of all NCVPS teachers in North Carolina is a concern. The purpose of this quantitative study was first to establish the learner-centered beliefs of NCVPS instructors in the North Carolina EOC assessments in Algebra I, Biology, and English I and second to examine if and to what extent a relationship existed between the learner-centered beliefs of NCVPS teachers and student performance on the North Carolina EOC assessments.

In retrospect, the demographic information did not indicate that a statistically significant relationship existed between the total years of teaching, the areas of preparation, or the highest degree earned with the level of learner-centered beliefs. These may be factors that influence student performance but were well beyond the scope of this study.

Learner-Centered Beliefs

The validation means score for each factor was determined by McCombs and Whisler (1997) on the Teacher Beliefs Survey as Factor 1 ($M = 3.40$), Factor 2 ($M = 2.28$), and Factor 3 ($M = 2.31$). As a result, McCombs and Whisler (1997) determined that teachers are considered teachers with learner-centered beliefs when their mean survey scores are > 3.4 for Learner-Centered Beliefs and survey scores whose mean is < 2.0 for Non-Learner-Centered Beliefs.

In contrast, McCombs and Whisler (1997) considered teachers with non-learner-centered beliefs teachers whose survey scores depicted a mean < 2.8 for Learner-Centered Beliefs and a mean > 2.4 for Non-Learner-Centered Beliefs.

Discussion of Results

Cronbach's Alpha, an ANOVA, Independent samples *t*-tests and Pearson's Product-Moment Correlation Coefficients were conducted in order to address the objectives of this quantitative research study. Survey responses obtained from 31 teachers of various schools along with the achievement levels of their students were utilized to measure variables of learner-centered beliefs of NCVPS teachers and student performance on the North Carolina EOC Assessments. The teachers were asked to complete the Teacher Beliefs Survey, which aimed to measure the extent to which they had learner- or non-learner-centered beliefs about learners, learning, and teaching. Additionally, several demographic variables were collected, such as age, education, and years of experience.

Hypothesis 1. School sites that have a higher percentage of students meeting (Level III) or exceeding (Level IV) the state standard on the EOC Assessments have learner-centered teachers teaching Algebra I, Biology, or English I.

Hypothesis 2. School sites that have a lower percentage of students meeting (Level III) or exceeding (Level IV) the state standard on the EOC Assessments have non-learner-centered teachers teaching Algebra I, Biology, or English I.

Research Question 1. The results, as presented in Chapter 4, identified one ($n = 1$) teacher as meeting the statistical criteria for Learner-Centered. In order to arrive at this conclusion, the means for each factor was statistically compared to the validation means to determine the level of learner-centered beliefs of NCVPS teachers. Likewise, only one ($n = 1$) teacher from the sample met McCombs and Whisler's (1997) criteria for having non-learner-centered beliefs.

Although the results of the statistical analysis identified only one teacher as

meeting McCombs and Whisler's (1997) definition of learner-centered, five teachers ($n = 5$) met or exceeded the validation mean of $M > 3.4$ for learner-centered beliefs about the learner, teaching, and learning. Subsequently, another five teachers ($n = 5$) were below the validation mean $M < 2.8$ for non-learner-centered beliefs about the learner, teaching, and learning. That is, 19 percent of the teachers surveyed were more learner-centered compared to 19 percent of the teachers who were the least learner-centered.

Although this finding is not statistically significant, it provides some insights about the teachers in the North Carolina Virtual Public School. Therefore, it is concluded that the other 17 teachers ($n = 17$) included in this study were neither learner-centered nor non-learner-centered about the learner, teaching, and learning.

As reported earlier, one teacher met McCombs and Whisler's (1997) statistical definition of a non-learner-centered teacher. As previously stated, only five ($n = 5$) teachers were below the validation mean of $M < 2.8$ for the learner-centered beliefs about the learner, teaching, and learning. Though not statistically significant, this finding does suggest that the participants in this study were clearly more learner-centered than non-learner-centered in their beliefs about the learner, teaching, and learning.

It was reported that five ($n = 5$) teachers were above the validation mean of $M > 2.4$ for non-learner-centered beliefs about the learner. Sixty percent of these teachers taught Algebra I while 20 percent of these teachers taught Biology or English I. Thus, it is concluded that the higher-performing teachers were unevenly split on their learner-centered beliefs.

Fourteen ($n = 14$) teachers were above the validation mean of $M > 2.4$ for non-learner-centered beliefs about teaching and learning. Forty-three percent of the teachers taught Algebra I, and 43 percent of the teachers taught English I.

Consequently, a modified McCombs and Whisler (1997) statistical definition for learner-centered that uses a higher mean on the learner-centered beliefs for the learner, teaching, and learning and lower means on the non-learner-centered beliefs about the learner and non-learner-centered beliefs about teaching and learning results in 20 teachers ($n = 20$) being learner-centered and only seven teachers ($n = 7$) being non-learner-centered.

There are at least four feasible explanations for these findings. First, in the Phase I and Phase II validation and subsequent follow-up studies using the Teacher Beliefs Survey, researchers did not identify subject-specific teachers or individual grade levels as the single focus of their studies. Subsequently, Algebra I, Biology, and English I teachers were selected to participate in this study. These subject areas may have specific requirements that prevent the differentiation of learner-centered from non-learner-centered beliefs of the teacher.

Second, as reported earlier, the small sample size meets the statistical requirement but is a limitation and is considered a possible explanation. When dealing with small sample sizes, a common result is that the standard errors surrounding the test statistics are larger than they would be with a larger sample. Larger standard errors result in the need for larger differences in the data to result in statistically significant results. Therefore, the lack of statistically significant findings may be directly related to the small sample.

Third, the amount of learner-centeredness defined by McCombs and Whisler (1997) may require a revision to fit neatly into the virtual world. Moreover, regardless of the level of learner-centeredness, the results of the statistical analysis did not yield a statistically significant difference between the teachers from higher-performing and lower-performing school sites, as reported in Chapter 4.

Finally, the differentiation of learner-centered from non-learner-centered beliefs of NCVPS teachers as measured by the Teacher Beliefs Survey may not be possible given variables or factors unique to a virtual environment.

To assess the second hypothesis, Research Questions 3, 4, and 5, asked if there was a difference in the level of Learner-Centered Beliefs (LCB), Non-Learner-Centered Beliefs (NLCB), and Non-Learner-Centered Beliefs about Teaching and Learning (NLCBTL) of NCVPS. Independent samples *t*-tests were conducted to assess whether significance differences existed between the NLCB and NLCBTL scores of teachers in the proficient group and the not proficient group. As determined through statistical tests, there was no difference in the LCB, NLCB, and NLCBTL scores between teachers in school sites with high or low percentages of students with Level III-IV on the EOC Assessment.

The results of this study did not indicate a clear differentiation of learner-centered from non-learner-centered beliefs of NCVPS teachers. This created doubt in the ability to examine and statistically investigate if and to what extent differences as well as any causal relationships between the level of teacher beliefs and student performance on the NC EOC assessments existed.

The results of Research Question 3 ($t(25) = -0.102, p = 0.919$) found that students scoring a Level III/IV had slightly higher learner-centered teachers than students scoring a Level I/II. However, although there was a difference, it was not statistically significant at the $p < .05$ level of significance. Therefore, the independent sample *t*-test failed to reject the null hypothesis that there was a statistical difference in the level of learner-centered beliefs of NCVPS teachers and student performance on the EOC assessments in Algebra I, Biology, or English I.

As mentioned earlier, the lack of a clear differentiation of learner-centeredness among the teachers selected to participate in this study is associated with three plausible explanations: a) there may be no actual differences between the learner-centered beliefs of NCVPS teachers, b) the teacher determined the level of learner-centered beliefs and did not evaluate the behaviors and practices that define learner-centeredness, and c) there may have been some confusion regarding the term Learner-Centered. McCombs and Whisler (1997) conceded that there is a lot of confusion about what is meant by learner-centered. Subsequently, it is possible that 25 teachers ($n = 25$) were unsure about how their beliefs related to the learner-centered principles as defined by McCombs and Whisler. The confusion may explain why fourteen teachers ($n = 14$) in this study rated themselves as learner-centered but not learner-centered in the areas of teaching and learning. Therefore, the teachers in this study did not consider themselves as learner-centered to the level of the validation sample reported by McCombs and Whisler.

The results of Research Question 4 ($t(25) = -0.604, p = 0.551$) indicated that students scoring a Level III/IV had slightly higher learner-centered teachers than students scoring a Level I/II. However, although there was a difference, it was not statistically significant at the $p < .05$ level of significance.

Once again, the clear lack of variation of non-learner-centeredness among the teachers selected to participate in this study is associated with these two possible explanations: a) there may be no actual differences between the non-learner-centered beliefs of NCVPS teachers as divided by EOC scores, and b) teachers were either undecided or unsure about what they believe and practice. McCombs and Whisler (1997) emphasized the importance of cross-validating teacher perceptions of learner-centered beliefs with student impressions of teacher practices. As reported earlier, this study was

designed to determine if and to what extent differences existed between what teachers themselves believed. Therefore, it was concluded that the teachers selected to participate in this study did not believe themselves to be non-learner-centered to the level of the validation samples reported by McCombs and Whisler (1997). Another plausible explanation is that the NCVPS teachers did not explicitly believe that they were either learner-centered or non-learner-centered about the learner, teaching, and learning.

The final question which examined differences in teacher beliefs investigated if there was a difference in the level of non-learner-centered beliefs about teaching and learning between teachers whose students met or exceeded Level III/IV than those teachers with a lower percentage of students on the EOC assessments in Algebra I, Biology, or English I. The findings ($t(25) = -0.505, p = 0.618$) resulted in a failure to reject the null hypothesis.

In harmony with the discussions regarding Research Questions 1, 2, 3, and 4, the inability to clearly differentiate between the learner-centered and non-learner-centered beliefs of NCVPS teachers limited data analysis and affected the results of the research question mentioned previously.

In conclusion, one possible explanation for the failure to reject the first two null hypotheses is partly due to the small number of teachers surveyed and the selection of the participants from a single school across multiple subject areas. Previous research by McCombs and Whisler (1997) did not select participants by subject areas. Additionally, the amount of learner-centeredness defined by McCombs and Whisler (1997) may require a revision to fit neatly into the virtual world. Finally, the NCVPS may not attract teachers who have learner-centered or non-learner-centered beliefs.

The third hypothesis stated: There is a higher correlation between student

performances on the EOC Assessments with teachers with learner-centered beliefs. In order to test this hypothesis, Question 6 asked: “What is the relationship of learner-centered beliefs and the level of performance on the EOC assessments in Algebra I, Biology, or English I?” A correlation analysis was conducted to assess whether the correlation of teachers’ scores in LCB and the proportion of students with Level III-IV on the EOC assessment was not significantly different from zero. The result of this analysis revealed that learner-centered beliefs were not significantly associated with student achievement. Thus, there is no relationship between student performances on the EOC assessments with teachers with learner-centered beliefs. The findings included a positive statistically significant relationship ($r = .0421, p < .05$) between NLCB and NLCBTL ($r = 0.421, <.05$). These correlations were consistent with previous research conducted by McCombs and Whisler (1997). No other correlations were significant at the 0.05 level.

Arguably, if teachers are considered learner-centered, they should also have inverse correlations with non-learner-centered beliefs about the learner as well as non-learner-centered beliefs about teaching and learning. Conversely, the results of this study did not statistically support this assumption.

There are many plausible explanations for this finding, as mentioned in the discussion of the previous research questions. The reasons include the small number of teachers surveyed; the selection of the participants from a single school across multiple subject areas; and the inability to differentiate the teachers selected to participate in this study with learner-centered beliefs about the learner, teaching, and learning from the teachers in the study group with non-learner-centered beliefs about the learner, teaching, and learning. Finally, the amount of learner-centeredness defined by McCombs and Whisler (1997) may require a revision to fit into the virtual world.

The fourth hypothesis stated: There is a higher inverse correlation between student's performances on EOC assessments with teachers with non-learner-centered beliefs. This examined if and to what extent was there a relationship between LCB and NLCB and student achievement. The correlation between teachers' scores in NLCB and the proportion of students with Level III-IV on the EOC assessment was not significantly different from zero ($r = .105, p > 0.05$). Likewise, the correlation between teachers' scores in NLCBTL and the proportion of students with Level III-IV on the EOC assessment was not significantly different from zero ($r = .168, p > 0.05$). Therefore, it was not possible to reject the null hypothesis that there was no relationship between student performances on the EOC assessments with teachers with non-learner-centered beliefs.

As reported earlier, the findings of this set of correlation coefficients were partly due to the small number of teachers surveyed and the selection of the participants from a single school across multiple subject areas. Also, the results of this study did not indicate a clear differentiation of learner-centered from non-learner-centered beliefs of NCVPS teachers.

As reported, the results failed to indicate that any significant correlation existed between EOC assessment scores and the level of learner-center beliefs of the NCVPS teachers that took part in this study. Therefore, the results of this set of correlation coefficients failed to reject the third and fourth hypotheses. There were no significant findings as a result of this study; regardless, this study still adds to the body of knowledge of learner-centered beliefs about the learner, learning, and teaching.

In fact, further data analysis was limited due to the lack of statistically significant differences between the learner-centered beliefs about the learner, teaching, and learning

and non-learner-centered beliefs about teaching and learning of NCVPS teachers. As mentioned earlier, the development of the Teacher Beliefs Survey did not single out teachers by subject area, as was the case in this study. Subsequently, determining the level of learner-centeredness without consideration of the unique Algebra I, Biology, and English I training and curriculum requirement were not considered as potential limiting variables. This is based on teacher certification and licensing requirements.

McCombs and Whisler (1997) found, “The teachers who are more learner-centered are more successful in engaging more students in an effective learning process and are more effective learners themselves and happier with their jobs” (p. 24). They added, “As a result of having learner-centered beliefs, characteristics, and dispositions, learner-centered teachers naturally and often intuitively engage in practices that honor the learner-centered model” (McCombs & Whisler, 1997, p. 83). Earlier, McCombs and Stiller (1995), noted that,

It is important to define and help teachers become more aware of those beliefs and assumptions about learners, learning and teaching that are consistent with an instructional orientation towards the *learner's needs, capabilities and perspectives* and toward learning as a process of personally constructing meaning. (p. 87)

Although traditionally it is imperative that teachers value their students, resulting in better performances from their students, this is not the case for computer-based programs. Since the learners go through their classes using virtual learning, the intervention of teachers might not be as effective as it is for face-to-face classes. Thus, students are affected more by computer-based interventions than by the beliefs, strategies, and perspectives of their teachers. This is evident because lacking a clear

differentiation of learner-centered from non-learner-centered beliefs of NCVPS teachers, the ability to examine and statistically investigate if and to what extent differences as well as casual relationships between the level of teacher beliefs and student performance on the NC EOC assessments was at best doubtful. This is based on the variety of the curriculum content that the teachers are responsible for.

Meece et al. (2003) conducted a survey which applied the learner-centered principles to 4,615 middle and high school students using an achievement goal framework, and their findings reported stronger mastery and performance goals when they perceived their teachers as using learner-centered practices that involved promoting positive relations, encouraging high-order thinking, and adapting instruction to individual needs (Meece et al., 2003 p. 457). However, through the results of this study, it was determined that learner-centered beliefs of NCVPS teachers are not related their students' performance on the NC EOC assessments. Since no difference was observed for learner-centered and non-learner-centered beliefs of teachers in terms of their performances on the NC EOC assessments, the results of this study suggested that regardless of the teachers' beliefs, the students would perform similarly in the NC EOC Assessments. In line with this, it can be drawn from the results of this study that virtual public schools should develop strategies primarily focused on computer-based learners in order to ensure that they perform better in assessment exams. Instead of encouraging teachers to become learner-centered, teachers could develop other skills which could be more visible and experienced by students in virtual schools.

Conclusion

Chapter 1 introduced the background of the study, which underscored the pressing issue regarding the increase in distance learning schools and the effect of teachers on the

performance of their students. Teachers have the greatest influence on student learning. However, with the increase in number of schools offering virtual learning, determining teacher effectiveness requires more than a simple checklist of do's and don'ts that fails to account for the depth and quality of teacher performance. Several researchers have argued that the mass infusion of technology in the classroom has had a minor or negative impact on student learning (Cuban, 2001; Robertson, 2003). There are considerable barriers that technology teachers face on a daily basis including: software download restrictions, bandwidth limitations, content filtering, and network reliability and availability. These barriers are amplified in a virtual learning environment because teachers cannot assess their students face-to-face. Therefore, today's educators require new tools to effectively navigate the complexities of teaching and learning.

Learners who choose electronic or virtual learning usually have a learning preference that includes visual, auditory, or tactile. A learner with strong visual tendencies does well with graphics-oriented software utilizing bright colors and pictures; a student who learns by touching would benefit from an Electronic Learning Aid (ELA) that encourages hand-on interaction. ELAs often focus on the learners' special needs, which more often than not eliminate the tendency of boredom and promote a fun way of learning. More so, it lessens the interaction with teachers which are dominant in traditional learning methods.

Online learning is a form of electronic learning (e-learning) enabling people to use networked information and communication technology in teaching and learning internationally (Saade & Kira, 2009). Other terms used to describe e-learning include virtual learning, distributed learning, network learning, and web-based learning. Online learning is an educational process that utilizes information and communications

technology to mediate asynchronous as well as synchronous learning and teaching activities.

Through the extensive literature review conducted in Chapter 2, it was determined that the focus of this study should be on examining learner-centered and non-learner-centered teachers and considering how those beliefs relate to student performance for distance learners. Specifically, the purpose of this study was to examine the relationship of learner-centered beliefs of NCVPS teachers and their students' performances on the North Carolina EOC assessments. The outcomes of the study were based on quantitative data collected using North Carolina's Algebra I, Biology, and English I EOC assessment scores for school year 2010-2011 and by using the Assessment of Learner-Centered Practices survey. The assessment of learners is essential in education (Schmeeckle, 2003, p. 246). According to Schmeeckle (2003), the instructor can find out whether his/her methods of teaching and course structures are effective as measured through tests and survey outcomes. Therefore, for the purpose of this study, a correlational study was conducted to assess whether there were significant differences in performances of students based on beliefs of teachers with respect to being learner-centered or not.

Chapter 3 discussed the methodology used to conduct the study. It provided a summary of the discussion of the research design, population, sample plan and size, and instrumentation, as well as information on the data collection and statistical analysis processes. The analyses included descriptive statistics on the demographics, independent samples *t*-tests, and correlation analysis to determine whether there were significant differences in performances of students based on beliefs of teachers with respect to being learner-centered or not. Chapter 4 presented the overview of the data collection techniques and description of the sample. The results of this study have suggested that

teacher beliefs, such as being learner-centered, do not affect the performance of students, specifically in a virtual learning environment.

Online learning is beneficial to learners; they are able to share their learning perspectives online without the need to meet face-to-face. Unlike classroom lectures, online learning methods offer message sharing through chats, online discussion forms, and public areas where students can post their information. This form of sharing information is of great benefit to students because they combine new opinions with their own and develop a solid foundation for learning (Picciano & Seaman, 2009). In a survey of educational administrators, Picciano and Seaman (2009) indicated “students learning under the online system experience a sense of equality” (p. 13). Each individual has the same opportunity to speak out by posting their comments on the internet without any distractions experienced in lecture method such as sitting arrangement or gender biases. Students who are shy and anxious feel more comfortable while expressing their ideas and backing up facts on the internet.

Moreover, online methods of learning instruction or distance learning instruction help students who have difficulties in grasping concepts (Bowen, 2006). The instructors are more accessible online. Students and instructors undertaking subjects supplemented by interactive electronic media can improve accessibility because the asynchronous learning environment allows communication at the convenience of each party. Another benefit of online learning is that it enables student-centered teaching approaches. Different students have unique learning styles. The environment in online learning permits instructors to build one course while providing a variety of resources to the students, enabling those students to choose the resources and methods that are best for them. The instructor can paste all the resources for learners, including course outlines

and documents. The students can review the resources at their own pace while gaining the opportunity to learn without creating additional pressure on their instructors.

Therefore, distance learning provides a new experience for students, which encourages them to be more independent from their teachers. This could be the reason the strategy of being learner-centered is irrelevant in such an environment. However, instructors are still deemed as important factors, which affect the performance of their students in virtual environments because they monitor and assess each student's progress through responses in online posts and discussions. Since teachers regulate discussions in online environments, it is still important to provide focus on learners. However, it is possible that students experience the same level of focus from all teachers because the learning process is not face-to-face. Thus, similar student performances were observed for learner-centered and non-learner-centered teachers.

Recommendations for Future Study

The results of this study verified that there is no significant difference in performances of students based on beliefs of teachers with respect to being learner-centered or not. The study sought to provide better understanding of academic performance in virtual public schools and to determine whether learner-centered teachers had a positive influence on student performance in this environment. The findings from the study may shed light on improving teaching strategies in distance learning environments. Further research is needed to explore factors that were limited in the study. The following recommendations address leadership and future research considerations.

A larger number of participants could be more helpful in drawing generalizable conclusions about the variables considered in the study. The conclusions drawn from this

study are only applicable to the group of teachers and students in North Carolina that completed the survey and provided their assessment scores. Future researchers might want to conduct a qualitative research study to interview more diverse participants in terms of race and geographical location to see variations of the effects of teaching strategies, which could be more focused on distance learning environments. A qualitative research design is also suggested in order to capture the lived experiences of students and teachers in terms of distance learning. Through a qualitative design, students could express their suggestions and comments on current strategies used by teachers in teaching distance learning classes. A qualitative research design will offer deeper understanding on the perceptions of the selected participants regarding the subject matter. Moreover, a different geographical location could also be examined to determine whether similar results would be drawn. The results of this study could also be compared to other geographical locations to generalize theories beyond North Carolina.

Future researchers should conduct a study that would allow students to answer questionnaires as well to obtain the most reliable and best possible results in terms of their perceptions of how their teacher handles their class. It might also be more constructive if researchers collected data on the perceptions of both teachers and students with regards to learner-centered strategies. It is possible that teachers perceive themselves as using learner-centered strategies; however, students could also have a different perception. With this, the accuracy of the study could also be improved in terms of the scope of data used. Furthermore, given the limitations of the study, it might be beneficial for future researchers to utilize a study instrument that has a broader scope of potential aspects or facets of learner-centered teaching strategies. Lastly, it is recommended that a longitudinal study be conducted to investigate student performance

over time since students might be adjusting to changes in terms of the distance-learning environment.

Delimitations

According to Creswell (2008), “Delimitations address how the study can be narrowed in scope” (p. 150). This study had delimitations including instruments, sample size, survey collection, geographical location, and theoretical framework. The first delimitation was the instrument. The survey questionnaire considered for this study was the Assessment of Learner-Centered Practices survey. The delimitation might be the fact that the Assessment of Learner-Centered Practices Survey may not have captured the entire condition in virtual learning environments. However, reliability analyses were performed to ensure that the questionnaire was reliable in capturing the constructs for the sampled participants.

The second delimitation involved the sample size and geographical location. The delimitation involved the sample size of the study and the sources of participants. Only 31 teachers were collected for the study; however, as targeted independent samples *t*-tests, it is necessary to collect at least 128 participants to achieve a power of 80% (Connaughton & Daly, 2004). Moreover, the sources of data were from virtual public schools in North Carolina. Since only 31 participants agreed to participate in this study, the results of the study were based on the responses of these participants.

The next delimitation was the collection of the surveys. In terms of the collection, survey questionnaires were used to capture the perceptions of participants. Therefore, participants responded to the questionnaire based on how they understood the questions, and no clarifications were addressed. The survey responses were collected and then processed by using SPSS. Since the questionnaire was used in a previous study, the

questions were deemed clear and easy to understand for the participants.

References

- Anderson L. W., & Krathwohl, D. R. (Eds). (2001). *A taxonomy for learning, teaching and assessing*. NY: Addison Wesley Longman, Inc.
- APA Work Group of the Board of Educational Affairs (1997). *Learner-centered psychological principles: A framework for school reform and redesign*. Washington, DC: American Psychological Association.
- Baldarrain, Y. (2006). Distance education trends: Integrating new technologies to foster student interaction and collaboration. *Distance Education* 27(2), 139-153.
- Bain, C. C. (2008). *How to use SPSS: A step-by-step guide to analysis and interpretation* (5th ed.). Glendale, CA: Pyrzack Publishing.
- Bandura, A. (1969). *Principles of behavior modification*. NY: Holt, Rinehart, and Winston.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 195-215.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. NY: W. H. Freeman.
- Beagle, D. (2012). Educating students from generational poverty: Building blocks from A to Z, Eugene School District 4J. Retrieved from <http://www.4j.lane.edu/wallace/images/poverty/pdf/educating-students-poverty.pdf>
- Bolton, S., & Bon, C. (2009). *Pharmaceutical statistics: Practical and clinical applications* (5th ed.). NY, NY: Informa Healthcare.
- Center on Education Policy. (2010). *How many schools and districts have not made adequate yearly progress? Four-year trends*. Washington, DC: Author.
- Charalambous, C. Y., & Philippou, G. N. (2010). Teachers' concerns and efficacy beliefs about implementing a mathematics curriculum reform: Integrating two lines of inquiry. *Educational Studies in Mathematics*, 75(1), 1-21. Springer, Netherlands. Retrieved from <http://www.springerlink.com/index/10.1007/s10649-010-9238-5>
- Charlotte-Mecklenburg Schools (2010). Nation board certification. *Impact on Teacher Effectiveness*. Center for Research & Evaluation Office of Accountability. Retrieved from <http://www.cms.k12.nc.us/cmsdepartments/accountability/cfre/Documents/National%20Board%20Certification%20Report.pdf>

- Connaughton, S. L., & Daly, J. A. (2004). Leading from afar: Strategies for effectively leading virtual teams. In S. H. Godar & S. P. Ferris (Eds.), *Virtual & collaborative teams: Process, technologies, & practice* (pp. 49-75). Hershey, PA: Idea Group, Inc.
- Council of Chief State School Officers (2011). *InTASC model core teaching standards: A resource for state dialogue (April 2011)*. Washington, DC: Author.
- Creswell, J. A. (2008). *Educational research. Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson-Hall.
- Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University.
- DuFour, R., DuFour, R., Eaker, R., & Many, T. (2006). *Learning by doing*. Bloomington: Solution Tree Press.
- Eaker, R., DuFour, R., & DuFour, R. (2002). *Getting started: Reculturing schools to become professional learning communities*. Bloomington, IN: Solution Tree Press.
- Fulton, K. L. (1999). *How Teachers' Beliefs About Teaching and Learning are Reflected in Their Use of Technology: Case Studies from Urban Middle Schools*. University of Maryland: College Park. Retrieved from <http://www.cs.umd.edu/hcil/blc/fulton-thesis.html>
- Gay, L. R., Mills, G. E. & Airasian, P. (2006). *Educational research: Competencies for analysis and application* (8th ed.). Upper Saddle River, NJ: Prentice Hall.
- Gersten, G. (2009). Types of research and their roles in improvement of practice. National Center for Learning Disabilities. Retrieved from <http://www.ncld.org/at-school/especially-for-teachers/effective-teaching-practices/types-of-research-and-their-roles-in-improvement-of-practice>
- Gollwitzer, P. M., & Oettingen, G. (2001). Motivation: History of the concept. In J. N. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Science*, 15, 10109-10112. Retrieved from [http://psych.nyu.edu/oettingen/Gollwitzer,%20P.%20M.,%20&%20Oettingen,%20G.%20\(2002\).%20Motivation.pdf](http://psych.nyu.edu/oettingen/Gollwitzer,%20P.%20M.,%20&%20Oettingen,%20G.%20(2002).%20Motivation.pdf)
- Guskey, T. R. (1987). *Teacher efficacy, self-concept, and attitudes toward the implementation of mastery learning*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

- Handal, B., & Herrington, A. (2003). Mathematics teachers' beliefs and curriculum reform mathematics teachers' beliefs and practices. *Mathematics Education Research Journal*, 15(1), 59-69. Retrieved from <http://www.springerlink.com/index/C340W07838383152.pdf>
- Hoard, S. M. (1997). *Professional learning communities: Communities of continuous inquiry and improvement*. Austin, TX: Southwest Educational Research Laboratory. Retrieved from <http://eric.ed.gov/PDFS/ED410659.pdf>
- Huetinck, L., & Munshin, S. N. (2011). Research on motivation and learning. Education.com. Retrieved from <http://www.education.com/reference/article/research-motivation-learning/>
- Huitt, W. (2007). Maslow's hierarchy of needs. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved from <http://www.edpsycinteractive.org/topics/regsys/maslow.html>
- Kaufhold, J. A. (2007). *Basic statistics for educational research*. Lincoln, NE: iUniverse.
- Kendall, J., Alpert, A. M., & Odum, M. (2011). *A comparison of McREL's teacher evaluation standards and InTASC's model core teaching standards*. Denver: Mid-continent Research for Education and Learning.
- Lachat, M. A. (2001). Data-driven high school reform. The Breaking Ranks Model. Retrieved from http://www.alliance.brown.edu/pubs/hischlrfm/datdrv_hsrfm.pdf
- Lambert, N., & McCombs, B. L. (Eds.). (1998). *How students learn: Reforming schools through learner-centered education*. Washington, DC: APA Books.
- Lezotte, L. W. (2012). Revolutionary and evolutionary: The effective schools movement. Retrieved from Effective Schools website: <http://www.effectiveschools.com/images/stories/RevEv.pdf>
- Lloyd, G. M. (1999). Two teachers' conceptions of a reform-oriented curriculum: Implications for mathematics teacher development. *Journal of Mathematics Teacher Education*, 2(3), 227-252. Retrieved from <http://dx.doi.org/10.1023/A:1009965804662>
- Manouchehn, A. (1997). School mathematics reform: Implications for mathematics teacher preparation. *Journal of Teacher Education*, 48, 197-209. DOI: 10.1177/0022487197048003005
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50, 370-396.

- Maslow, A. H. (1970). *Motivation and personality* (2nd ed.). New York: Harper and Row.
- McCombs, B. L. (1999). *The assessment of learner-centered practices (ALCP): Tools for teacher reflection, learning, and change*. Denver, CO: University of Denver Research Institute.
- McCombs, B. L. (2000). *Assessing the role of educational technology in the teaching and learning process: A learner-centered perspective*. Paper presented at the Secretary's Conference on Educational Technology of the Department of Education, Alexandria, VA. Retrieved from <http://tepservers.ucsd.edu/courses/tep203/fa04/a/articles/mccombs.pdf>
- McCombs, B. L. (2003). Providing a framework for the redesign of K-12 education in the context of current educational reform issues. *Theory Into Practice*, 42(2), 93-101.
- McCombs, B. L., & Lauer, P. A. (1997). Development and validation of the Learner-Centered Battery: Self-Assessment tools for teacher reflection and professional development. *The Professional Educator*, 20(1), 1-21.
- McCombs, B. L., & Lauer, P. A., & Peralez, A. (1997). *Researcher Test Manual for the Learner-Centered Battery*. Aurora, CO: McREL.
- McCombs, B. L. & Miller, L. (2009). *The school leader's guide to learner-centered education. From complexity to simplicity*. Thousand Oaks, CA: Corwin Press, Inc.
- McCombs, B. L., & Quia, M. A. (2002). What makes a comprehensive school reform model learner-centered? *Urban Education*, 37(4), 476-496.
- McCombs, B. L., & Stiller, J. R. (1995). *Development and validation of the Learner Centered Battery: Self assessment tools for teachers and administrators*. Aurora, CO: Mid-continent Regional Education Laboratory.
- McCombs, B. L., & Whisler, J. S. (1997). *The learner-centered classroom and school: Strategies for increasing student motivation and achievement*. San Francisco: Jossey-Bass.
- McKeachie, W. J., Pintrich, P. R., Lin, Y., & Smith, D. A. F. (1987). *Teaching and Learning in the College Classroom*. A Review of the Research Literature (1986) and November 1987 Supplement. National Center for Research to Improve Postsecondary Teaching and Learning, Ann Arbor, MI. ED314999.
- Meece, J. L. (2003). Applying learner-centered principles to middle school education. *Theory into Practice*, 42(2), 109-116.
- Meece, J. L., Herman, P., & McCombs, B. L. (2003). Relations of learner-centered teaching practices to adolescents' achievement goals. *International Journal of Educational Research*, 39, 457-459. <http://dx.doi.org/10.1016/j.ijer.2004.06.009>

- Mid-continent Regional Educational Laboratory. (2011). *McREL online teacher & principal evaluation systems*. Retrieved from <http://www.mcrel.org/evalsystems/index.asp>
- Murphy, E., & Rodriguez-Manzanares, M. E. (2008). *High school teachers' beliefs about learner-centered e-learning*. E-Learning and Digital Media 5. Retrieved from <http://www.worldwords.co.uk/rss/abstract.asp?j=elea&aid=455>
- Nagel, D. (2011). More than half of U.S. districts have students in distance learning programs. *The Journal E-Learning|Research*. Retrieved from <http://thejournal.com/articles/2011/12/01/more-than-half-of-u.s.-districts-have-students-in-distance-learning-programs.aspx>.
- National Board for Professional Teaching Standards. (2012). 2011 state rankings. Retrieved from http://www.nbpts.org/userfiles/file/2011_StateRankings_TotalNBCTs.pdf
- National Board for Professional Teaching Standards. (2002). What teachers should know and be able to do. Retrieved from http://www.nbpts.org/UserFiles/File/what_teachers.pdf
- National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington, DC: United States Department of Education.
- NIST/SEMATECH e-Handbook of Statistical Methods. (2012). Are the means equal? (7.4.3) Retrieved from <http://www.itl.nist.gov/div898/handbook/>
- No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425 (2002). Retrieved from <http://www2.ed.gov/policy/elsec/leg/esea02/107-110.pdf>.
- North Carolina Virtual Public School. (2008). August 2008 state board report. Retrieved from <http://www.ncvps.org/docs/results/stateboardreport.pdf>.
- North Carolina Virtual Public School. (2009). Formative evaluation report. Prepared by The Friday Institute for Educational Innovation. Retrieved from http://www.ncvps.org/docs/results/09_report_final.pdf.
- Odom, A. L., Stoddard, E. R., & LaNasa, S. M. (2007). Teacher Practices and Middle-school Science Achievements. *International Journal of Science Education*, 29(11), 1329-1346. Retrieved from <http://www.informaworld.com/openurl?genre=article&doi=10.1080/09500690601001971&magic=crossref>
- Ouyang, R. (2012). *Basic concepts of quantitative research*. Kennesaw, GA: Kennesaw State University. Retrieved from <http://ksuemail.kennesaw.edu/~rouyang/ED-research/methods.htm>

- Picciano, A., & Seaman, J. (2009). *K-12 online learning. A 2008 follow-up of the survey of U.S. school district administrators*. Needham, MA: The Sloan Consortium. Retrieved from http://www.sloan-c.org/publications/survey/pdf/k-12_online_learning_2008.pdf
- Public Schools of North Carolina State Board of Education/Department of Public Instruction. (2011a). *Accountability services division: Adequate yearly progress 2010-2011*. Retrieved from <http://www.dpi.state.nc.us/nclb/abcayp/>
- Public Schools of North Carolina State Board of Education/Department of Public Instruction. (2011b). *Budget*. Retrieved from <http://www.ncpublicschools.org/budget/>
- Public Schools of North Carolina State Board of Education/Department of Public Instruction. (2011c). *North Carolina Virtual Public School History*. Retrieved from <http://www.ncvps.org/index.php/about-us/history/>
- Public Schools of North Carolina State Board of Education/Department of Public Instruction. (2011d). *Evaluating the Effectiveness of the North Carolina Virtual Public Schools System*. Financial and Business Services Internship Program Project 5.3. Retrieved from <http://www.dpi.state.nc.us/docs/intern-research/reports/ncvps.pdf>.
- Robertson, H. (2003). Toward a theory of negativity. Teacher education and information and communication technology. *Journal of Teacher Education*, 54(4), 280-296. DOI: 10.1177/0022487103255499
- Saade, G., & Kira, D. (2009). Computer anxiety in e-learning: The effect of computer self-efficacy. *Journal of Information Technology Education*, 8, 177-190.
- Santos, F., & Gebeloff, R. (2012, February 24). Teacher quality widely diffused, ratings indicate. *The New York Times*, pp. E1, E2.
- Sawchuk, S. (2009). Report finds achievement gap continuing to narrow. Ed week update. *Education Week*, 28(6).
- Schmeeckle, J. (2003). Online training: An evaluation of the effectiveness and efficiency of training law enforcement personnel over the internet. *Journal of Science Education and Technology*, 12, 205-260.
- Schunk, D. H. (2000). Coming to terms with motivation constructs. *Contemporary Educational Psychology*, 25(1), 116-119.

- Tyack, D., & Cuban, L. (1995). *Tinkering toward utopia: A century of public school reform*. Cambridge, MA: Harvard University Press. U.S. Department of Education. (2008). *Evaluating online learning: Challenges and strategies for success*. From the Office of Innovation and Improvement. Washington, D.C.: Author.
- U.S. Department of Education, Office of Innovation and Improvement. (2008). *Evaluating online learning: Challenges and strategies for success* (Order No. ED004344P). Retrieved from www.ed.gov/admins/lead/academic/evalonline
- Weinberger, E., & McCombs, B. L. (2001, April). The impact of learner-centered practices on the academic and non-academic outcomes of upper elementary and middle school students. *Integrating what we know about learners and Learning: A foundation for transforming PreK-20 Practices*. Symposium conducted at the annual meeting of the American Educational Research Association, Seattle.
- Wenglinsky, H. (2000). *How teaching matters: Bringing the classroom back into discussions of teacher quality*. Princeton, NJ: Educational Testing Service.
- Yell, M. L. (2006). The law and special education. *Education.com*. Retrieved from <http://www.education.com/reference/article/goals-no-child-left-behind/>
- Zhao, Y. (2009). *Catching up or leading the way: American education in the age of globalization*. Alexandria, VA: American Society of Curriculum Development.

Appendix A

Learner-Centered Psychological Principles

The Learner-Centered Psychological Principles

COGNITIVE AND METACOGNITIVE FACTORS

Principle 1: Nature of the learning process

The learning of complex subject matter is most effective when it is an intentional process of constructing meaning from information and experience.

Principle 2: Goals of the learning process

The successful learner, over time and with support and instructional guidance, can create meaningful, coherent representations of knowledge.

Principle 3: Construction of knowledge

The successful learner can link new information with existing knowledge in meaningful ways.

Principle 4: Strategic thinking

The successful learner can create and use a repertoire of thinking and reasoning strategies to achieve complex learning goals.

Principle 5: Thinking about thinking

Higher-order strategies for selecting and monitoring mental operations facilitate creative and critical thinking.

Principle 6: Context of learning

Learning is influenced by environmental factors, including culture, technology, and instructional practices.

MOTIVATIONAL AND AFFECTIVE FACTORS

Principle 7: Motivational and emotional influences on learning

What and how much is learned is influenced by the learner's motivation. Motivation to learn, in turn, is influenced by the individual's emotional states, beliefs, interests and goals, and habits of thinking.

Principle 8: Intrinsic motivation to learn

The learner's creativity, higher-order thinking, and natural curiosity all contribute to motivation to learn.

Intrinsic motivation is stimulated by tasks of optimal novelty and difficulty, relevant to personal interests, and providing for personal choice and control.

Principle 9: Effects of motivation on effort

Acquisition of complex knowledge and skills requires extended learner effort and guided practice. Without learners' motivation to learn, the willingness to exert this effort is unlikely without coercion.

DEVELOPMENTAL AND SOCIAL FACTORS

Principle 10: Developmental influence on learning

As individuals develop, they encounter different opportunities and experience different constraints for learning. Learning is most effective when differential development within and across physical, intellectual, emotional, and social domains is taken into account.

Principle 11: Social influences on learning

Learning is influenced by social interactions, interpersonal relations, and communication with others.

INDIVIDUAL DIFFERENCES FACTORS

Principle 12: Individual differences in learning

Learners' different strategies, approaches, and capabilities for learning are a function of prior experience and heredity.

Principle 13: Learning and diversity

Learning is most effective when differences in learners' linguistic, cultural, and social backgrounds are taken into account.

Principle 14: Standards and assessment

Setting appropriately high and challenging standards and assessing the learner and learning progress—including diagnostic, process, and outcome assessment—are integral parts of the learning process.

McCombs, B.L. (2001). What Do We Know About Learners and Learning? The Learner-Centered Framework: Bringing the Educational System into Balance. *Educational Horizons*, 182-193.

Retrieved from: <http://www.sas.upenn.edu/~kimg/mcephome/educ636/lcp.html>

Appendix B

Teacher Beliefs Survey

Part I Background/Demographic Information**Select your response to following questions.**

- | | |
|---|--|
| 1. The total number of total years teaching | 2. What was your Major area of teaching preparation? |
| A 1-4 | A Mathematics |
| B 5-9 | B Science |
| C 10-15 | C Language Arts |
| D 16-23 | D Social Studies |
| E 24+ | E Other |
| 3. The total number of total years teaching mathematics | 4. What was your Minor area of teaching preparation? |
| A 1-4 | A Mathematics |
| B 5-9 | B Science |
| C 10-15 | C Language Arts |
| D 16-23 | D Social Studies |
| E 24+ | E Other |
| 5. The total number of total years teaching middle school mathematics | 6. What is the Highest degree earned? |
| A 1-4 | A BA/BS |
| B 5-9 | B MA/MS |
| C 10-15 | C Ed.D/Ph.D |

E 24+

D 16-23

Optional questions

7. What is your age range?

A 21-25

B 26-30

C 31-35

D 36-40

E 41+

8. What is your ethnicity?

A Caucasian American

B African American

C Hispanic/Latino

D Asian

E Native American

F Other

9. What is your sex?

A Male

B Female

10. What reasons have students provided you as to why they did not complete the course?

Part II Teacher Beliefs Survey

THE ASSESSMENT OF LEARNER-CENTERED PRACTICES

(ALCP):

TEACHER Survey (Grades 6-12) ©

DIRECTIONS for Part II: A number of statements that teachers in Grades 6 through 12 have used to describe themselves are shown below. Please read each statement carefully. Decide **to what extent** you agree or disagree with each statement. Do you *strongly disagree*, *somewhat disagree*, *somewhat agree*, or *strongly agree*? Select the appropriate number located in the box corresponding with each statement to indicate your choice. Answer carefully, but don't think too much about any one question.

PLEASE ANSWER EVERY QUESTION. Your responses will be kept private and confidential.

Responses:

1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Strongly Agree

Statement	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
1. Students have more respect for teachers they see and can relate to as real people, not just as teachers.	1	2	3	4
2. There are some students whose	1	2	3	4

personal lives are so dysfunctional that they simply do not have the capability to learn.				
3. I can't allow myself to make mistakes with my students.	1	2	3	4
4. Students achieve more in classes in which teachers encourage them to express their personal beliefs and feelings.	1	2	3	4
5. Too many students expect to be coddled in school.	1	2	3	4
6. If students are not doing well, they need to go back to the basics and do more drill and skill development.	1	2	3	4
7. In order to maximize learning, I need to help students feel comfortable in discussing their feelings and beliefs.	1	2	3	4

Statement	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
8. It's impossible to work with students who refuse to learn.	1	2	3	4
9. No matter how bad a teacher feels, he or she has a responsibility not to let students know about those feelings.	1	2	3	4
10. Addressing students' social, emotional, and physical needs is just as important to learning as meeting their intellectual needs.	1	2	3	4
11. Even with feedback, some students just can't figure out their mistakes.	1	2	3	4
12. My most important job as a teacher is to help students meet well established standards of what it takes to succeed.	1	2	3	4
13. Taking the time to create caring relationships with my students is the most important element for	1	2	3	4

student achievement.				
14. I can't help feeling upset and inadequate when dealing with difficult students.	1	2	3	4
15. If I don't prompt and provide direction for student questions, students won't get the right answer.	1	2	3	4
16. Helping students understand how their beliefs about themselves influence learning is as important as working on their academic skills.	1	2	3	4
17. It's just too late to help some students.	1	2	3	4
18. Knowing my subject matter really well is the most important contribution I can make to student learning.	1	2	3	4
19. I can help students who are uninterested in learning get in touch with their natural motivation to learn.	1	2	3	4

Statement	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
20. No matter what I do or how hard I try, there are some students who are unreachable.	1	2	3	4
21. Knowledge of the subject area is the most important part of being an effective teacher.	1	2	3	4
22. Students will be more motivated to learn if teachers get to know them at a personal level.	1	2	3	4
23. Innate ability is fairly fixed and some children just can't learn as well as others.	1	2	3	4
24. One of the most important things I can teach students is how to follow rules and to do what is expected of them in the classroom.	1	2	3	4
25. When teachers are relaxed and comfortable with themselves, they have access to a natural wisdom for	1	2	3	4

dealing with even the most difficult classroom situations.				
26. Teachers shouldn't be expected to work with students who consistently cause problems in class.	1	2	3	4
27. Good teachers always know more than their students.	1	2	3	4
28. Being willing to share who I am as a person with my students facilitates learning more than being an authority figure.	1	2	3	4
29. I know best what students need to know and what's important; students should take my word that something will be relevant to them.	1	2	3	4
30. My acceptance of myself as a person is more central to my classroom effectiveness than the comprehensiveness of my teaching skills.	1	2	3	4

Statement	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree
31. For effective learning to occur, I need to be in control of the direction of learning.	1	2	3	4
32. Accepting students where they are – no matter what their behavior and academic performance — makes them more receptive to learning.	1	2	3	4
33. I am responsible for what students learn and how they learn.	1	2	3	4
34. Seeing things from the students' point of view is the key to their good performance in school.	1	2	3	4
35. I believe that just listening to students is a caring way helps them solve their own problems.	1	2	3	4

© Copyright 1994. Used by permission of McREL. McCombs, B.L., & Lauer, P.A. (1994). *Development and Validation of the Learner-Centered Battery: Self Assessment Tools for Teacher Reflection and Professional Development*. Aurora, CO: Mid-continent Regional Education Laboratory.

Maura McGrath mmcgrath@mcrel.org

Eddy R. Malave

McREL is pleased to grant you permission to use McREL's Teacher Beliefs Survey in your dissertation. We ask that you include the statement "Copyright 1994. Used by permission of McREL." As well as a full scholarly citation as follows:

McCombs, B.L., & Lauer, P.A. (1994). *Development and Validation of the Learner-Centered Battery: Self Assessment Tools for Teacher Reflection and Professional Development*. Aurora, CO: Mid-continent Regional Education Laboratory.

This permission is limited to the use and materials stated in the above a paragraph. Any further use of our work requires prior written permission from McREL.

Please send us a copy of the completed dissertation for our records.

Thank you for your interest in McREL's work.

Maura McGrath

Knowledge Management Specialist

Mid-continent Research for Education and Learning (McREL)

4601 DTC Blvd., Suite 500

Denver, CO 80237-2596

P: 303.632.5558

F: 303.337.3005

mmcgrath@mcrel.org

<http://www.mcrel.org>

Appendix C

Achievement Levels for the North Carolina End-Of-Course Tests

Table C1. Achievement Levels for the North Carolina End-Of-Course Test of Algebra I

Level	Description	Scale Score Range
1	Students performing at this level do not have sufficient mastery of knowledge and skills in the subject to be successful at a more advanced level in the content area.	Less than or equal to 139
2	Students performing at this level demonstrate inconsistent mastery of knowledge and skills in the subject area and are minimally prepared to be successful at a more advanced level in the content area.	140-147
3	Students performing at this level consistently demonstrate mastery of the subject matter and skills and are well prepared for a more advanced level in the content area.	148-157
4	Students performing at this level consistently perform in a superior manner clearly beyond that required to be proficient in subject matter and skills and are very well prepared for a more advanced level in the content area.	Greater than or equal to 158

Note: Retrieved from: <http://www.ncpublicschools.org/accountability/testing/shared/achievelevel/alg1>

Table C2. Achievement Levels for the North Carolina End-of-Course Test of Biology

Level	Description	Scale Score Range
1	Students performing at this level do not have sufficient mastery of knowledge and skills of the course to be successful at a more advanced level in the content area.	Less than or equal to 137
2	Students performing at this level demonstrate inconsistent mastery of knowledge and skills of the course and are minimally prepared to be successful at a more advanced level in the content area.	138-146
3	Students performing at this level consistently demonstrate mastery of the course subject matter and skills and are well prepared for a more advanced level in the content area.	147-158
4	Students performing at this level consistently perform in a superior manner clearly beyond that required to be proficient in the course subject matter and skills and are very well prepared for a more advanced level in the content area.	Greater than or equal to 159

Note: Retrieved from: <http://www.dpi.state.nc.us/accountability/testing/shared/achievelevel/bio>

Table C3. Achievement Levels for the North Carolina End-of-Course Test of English I

Level	Description	Scale Score Range
1	Students performing at this level do not have sufficient mastery of knowledge and skills of the course to be successful at a more advanced level in the content area. Students performing at Achievement Level I demonstrate the need to develop the composition and reading comprehension skills required in the English I North Carolina <i>Standard Course of Study</i> .	Less than or equal to 137
2	Students performing at this level demonstrate inconsistent mastery of knowledge and skills of the course and are minimally prepared to be successful at a more advanced level in the content area. Students performing at Achievement Level II demonstrate inconsistent application of the composition and reading skills required in the English I North Carolina <i>Standard Course of Study</i> .	138-145
3	Students performing at this level consistently demonstrate mastery of the course subject matter and skills and are well prepared for a more advanced level in the content area. Students performing at Achievement Level III typically demonstrate composition and reading comprehension skills required by the English I North Carolina <i>Standard Course of Study</i> .	146-158
4	Students performing at this level consistently perform in a superior manner clearly beyond that required to be proficient in the course subject matter and skills and are very well prepared for a more advanced level in the content area. Students performing at Level IV demonstrate a strong command of the composition and reading comprehension skills required by the English I North Carolina <i>Standard Course of Study</i> .	Greater than or equal to 157

Note. Retrieved from <http://www.ncpublicschools.org/accountability/testing/eoc/english1/>