

**Identifying the Wants and Needs of North Carolina High School
Mathematics Teachers for Job Success and Satisfaction**

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Chapter One

Introduction

We are currently faced with a great dilemma in the state of North Carolina. Teachers are leaving the profession at an increasing rate, and many qualified college students are choosing not to enter the profession for various reasons. Currently about one-third of all newly hired teachers are leaving the profession within the first five years of teaching (Steffy et al., 2000). For many of these teachers, leaving is not so much related to a lack of skill as to a perceived lack of efficacy in the role of teacher (Steffy et al., 2000). Why are these teachers leaving the profession? Are their administrative support needs being met? Are their professional needs and wants being met? What are their professional wants and needs? What personal and professional characteristics do these teachers exhibit? The answers to these questions need to be found. They may give insight to the current teacher shortage.

All of the teachers included in this study teach mathematics to high school students that are between the ages of fourteen and eighteen. This study will explore the administrative support needs and wants, the professional development needs and wants, the professional and personal characteristics, and the career cycles of high school mathematics teachers in North Carolina. Additionally, it is of interest to determine if Nationally Certified and Non-Nationally Certified teachers share common needs and characteristics or if they differ in some specific needs and wants.

This study has both quantitative and qualitative components. It includes the 130 teachers from a population of 174 Nationally Certified Adolescence and Young Adulthood Mathematics teachers in the state of North Carolina. The entire population is not used, because 44 of the Nationally Certified teachers are no longer in the classroom. A random sample of 130 Non-Nationally Certified Mathematics teachers selected to mirror the geographic distribution of Nationally Certified teachers in North Carolina will also be used. For the purposes of this study, North Carolina will be defined in terms of three geographic regions: the Mountains, the Piedmont, and the Coastal Plains. The quantitative data for this study will be obtained through a self-administered mail survey sent to Nationally Certified Mathematics teachers and Non-Nationally Certified Mathematics teachers across North Carolina. Much of the analysis of the self-administered survey data will focus on identification of the administrative support and professional development needs and professional and personal characteristics of North Carolina teachers. The analysis will begin to explore similarities and differences between Board Certified and Non Board Certified teachers. Pearson's chi-squared test of independence will be used to test for differences in key measures by Board certification. The qualitative data for this study will be gathered through individual telephone interviews developed and implemented upon completion of the analysis of the self-administered surveys. Twenty individual telephone interviews will be conducted. Ten participants will be randomly selected from the Nationally Certified teachers, and ten participants will be randomly selected from the Non-Nationally Certified teachers. Qualitative data from the telephone interviews will supplement the findings

from the quantitative component of this research in order to provide a richer, more complete understanding of the needs and wants of North Carolina teachers and the factors that may be affecting job satisfaction among high school mathematics teachers.

Purpose of the Study

The purpose of this study is to determine what high school mathematics teachers want and need to do their best work in the classroom. The study will look at the similarities and differences of those high school mathematics teachers with National Board Certification and those without National Board Certification. Several studies have already been conducted that look at teacher wants and needs, however, none have looked specifically at high school mathematics teachers. Currently, the state of North Carolina has a shortage of these teachers. Emily Bivens from the University of North Carolina at Chapel Hill has previously looked at the wants and needs of Early Childhood Nationally Certified and Non-Nationally Certified Early Childhood teachers. Mushin Orsini, also from the University of North Carolina at Chapel Hill, has researched the wants and needs of North Carolina Teaching Fellows who are now teachers in public schools. In addition to work by Bivens and Orsini, two additional studies are currently underway at the University of North Carolina at Chapel Hill. Katie O'Connor will be looking at the wants and needs of Middle Childhood Nationally Certified and Non-Nationally Certified teachers. Diana Dagenhart will be looking at the wants and needs of Middle School Nationally Certified and Non-Nationally Certified teachers. All of these studies are under the direction of Dr. Barbara Day, head of the Curriculum and Instruction doctoral

program at the University of North Carolina at Chapel Hill. Following the completion of these individual research efforts, the data will be combined and the wants and needs of teachers across the elementary, middle and high school levels will be analyzed. The National Board for Professional Teaching Standards is funding this study and will use the results to further their knowledge of differences between teachers who are Nationally Certified and those who are not Nationally Certified.

Importance of this Study

This study is very important to education in North Carolina at this point in time. Currently, North Carolina faces a shortage of teachers. Some specialties are particularly in high demand, including high school mathematics. There are a number of key factors that have contributed to this growing problem. According to the Department of Public Instruction, a third of teachers leave the profession after the fifth year of teaching. Qualified teachers are becoming and will continue to be difficult to obtain and retain. We are also at a point when many teachers will soon be exiting the teaching profession due to retirement. This puts the state of North Carolina in a serious situation.

This study will help the Department of Public Instruction to become aware of the administrative support and professional development needs and wants that contribute significantly to job success and satisfaction among North Carolina high school mathematics teachers. Many other groups and individuals will have a significant interest in the results of this study. Policy makers, education researchers, administrators, Boards of Education, parents, students, and communities will rely on data from this study to better inform their understanding of the wants and needs of

high school mathematics teachers. They will learn about these teachers' professional development needs, administrative support needs, salary wants, classroom management issues, and many other issues that are of great importance to teachers. This study will help provide information on what teachers want and need to do their best work, which may help North Carolina retain qualified, committed high school mathematics teachers.

National Board for Professional Teaching Standards

What is National Board Certification and how do teachers become Nationally Certified in the area of high school mathematics? The National Board for Professional Teaching Standards was created in 1987 after the Carnegie Forum on Education and the Economy's Task Force on Teaching as a Profession released *A Nation Prepared: Teachers for the 21st Century* (May 16, 1986) (nbpts.org). The report followed the landmark report, *A Nation at Risk: The Imperative for Educational Reform*, 1983, developed by the President's Commission on Excellence in Education. *A Nation at Risk* set off alarms across the country with statements like, "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war" (nbpts.org). Educators, parents, business executives and legislators awakened to the economic and social consequences of an education system failing to keep pace with a changing American and global society (nbpts.org). The Carnegie task force report, *A Nation Prepared*, offered solutions: "The key to success lies in creating a profession equal to the task - a profession of well-educated teachers prepared to assume new powers and responsibilities to redesign schools for the

future" (nbpts.org). The task force urged the teaching profession to set the standards and certify teachers who meet those standards and called for the formation of the National Board for Professional Teaching Standards (nbpts.org).

National Board Certification is a symbol of professional teaching excellence. A National Board certificate will attest that a teacher was judged by his or her peers as one who is accomplished, makes sound professional judgments about students' best interests, and acts effectively on those judgments (nbpts.org). Offered on a voluntary basis, National Board Certification complements, but does not replace, state licensing (nbpts.org). While state-licensing systems set entry-level standards for novice teachers, National Board Certification establishes advanced standards for experienced teachers (nbpts.org).

National Board Certification also represents an opportunity for professional growth unlike any other now available to teachers. Teachers across the nation are able to gauge their skills and knowledge against objective, peer-developed standards of advanced practice. And as teachers hone their professional skills, their students reap the greatest rewards (nbpts.org).

The National Board for Professional Teaching Standards presents five core propositions. They are as follows: (nbpts.org)

1. Teachers are committed to students and their learning.
2. Teachers know the subjects they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.

4. Teachers think systematically about their practice and learn from experience.
5. Teachers are members of learning communities.

To obtain certification in the area of high school mathematics, teachers must complete a portfolio and exercises at an assessment center. The portfolio consists of six entries. The entries are Analysis of Student Work: Applications, Analysis of Student Work: Assessment, Instructional Analysis: Whole Class, Instructional Analysis: Small Groups, Documented Accomplishments I: Collaboration in the Professional Community, and Documented Accomplishments II: Outreach to Families and Community. The assessment center exercises consist of four 90-minute assessments. The teacher may choose to answer questions about Algebra, Geometry, Statistics, Calculus, and Discrete Mathematics. In completing the National Board Certification, teachers must display evidence of certain standards. These include commitment to students and their learning, equity, diversity, and fairness, knowledge of mathematics, knowledge of students, knowledge of teaching practice, the art of teaching, learning environment, ways of thinking mathematically, assessment, reflection and growth, families and community, and contributing to the professional community (nbpts.org).

Research Questions

The researcher will explore the following questions in this study:

1. Administrative Support:
 - a. What are the most important administrative support needs of high school mathematics teachers?

- b. To what degree are administrative support needs related to the personal or professional characteristics of high school mathematics teachers?
 - c. Are there differences in administrative support needs of National Board Certified teachers and Non-National Board Certified high school mathematics teachers?
2. Professional Development:
- a. What are the most important professional development needs of high school mathematics teachers?
 - b. To what degree are professional development needs related to the personal or professional characteristics of high school mathematics teachers?
 - c. Are there differences in the professional development needs of National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers?
3. Professional and Personal Characteristics:
- a. What are the common professional characteristics of high school math teachers? What are the common personal characteristics of high school mathematics teachers?)
 - b. Are there differences in the perceived personal and professional characteristics of National Board Certified high school mathematics teachers
4. and Non-National Board Certified high school mathematics teachers? Are there differences in where National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers place themselves on the career cycle?

5. Is there a difference between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers on job satisfaction?

Null Hypotheses:

1. There is no difference in the administrative needs of National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers.
2. There is no difference in the professional development needs of National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers.
3. There is no difference in the perceived personal and professional needs of National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers.
4. There is no difference in the stage of the career cycle that National Board Certified high school mathematics teachers and Non-National Board Certified mathematics teachers perceive themselves.
5. There is no difference in the job satisfaction reported by National Board Certified high school mathematics teachers and Non-National Board Certified mathematics teachers.

Definitions of Terms:

1. National Board Certified Teacher: A teacher that has successfully completed the process of National Board Certification and is an accomplished teacher according to the standards set forth by National Board.

2. Non-National Board Certified Teacher: A teacher that has not attempted National Certification, has not passed any component(s) of National Certification or did not pass the process of National Certification.
3. Novice Teacher: This stage of the teaching cycle is one of six used in the survey that begins when pre-service teachers encounter their first practicum experiences as part of their pre-service or teacher training programs. This cycle continues through student teaching and beginning intern experiences.
4. Apprentice Teacher: This stage of the teaching cycle is one of six used in the survey that begins for most teachers during their student teaching experience when they are given full responsibility of a classroom, including the planning and instruction delivery. This cycle continues into the first year of induction and often during the first two or three years of teaching.
5. Professional Teacher: This stage of the teaching cycle is one of six used in the survey that materializes when a teacher gains confidence and becomes secure in his/her role as a professional educator. These teachers make up the majority of school faculties and perceive themselves as lifetime teachers.
6. Expert/Master Teacher: This stage of the teaching cycle is one of six used in the survey that signifies high achievement as outlined by the National Commission on Teaching and America's Future. Expert/Master teachers have achieved National Board Certification.
7. Distinguished Teacher: This stage of the teaching cycle is one of six used in the survey that represents teachers who are truly gifted in the teaching field. They exceed current expectations for what teachers are expected to know and be able

to do, and they are often recognized by their peers and appointed to local, state, or national committees or commissions on education.

8. Emeritus Teacher: This stage of the teaching cycle is one of six used in the survey that is reserved for teachers who have formally retired, but who, because of their expertise and dedication to the field, continue to be an active member of the profession through consultation, volunteerism, mentoring or involvement with a professional organization. This cycle begins when a teacher plans to retire, prior to his/her actual retirement.
9. End-of-Course Test: A test developed by the Department of Public Instruction administered by teachers of certain courses, and taken by students to determine their proficiency level..

Research Assumptions

1. National Board Certification indicates exemplary performance on a standards based assessment of performance in teaching.
2. National Board Certified teachers may be more reflective in their teaching practices than Non-National Board Certified teachers, by virtue of the certification process.
3. National Board Certified teachers and Non-National Certified teachers may have different needs and wants for being successful in their current positions.
4. Non-National Board Certification status does not indicate poor or substandard professional performance.

Research Limitations

1. The researcher's role as a National Board Certified teacher may affect her ability to conduct and analyze the study objectively.
2. The study focuses on a small percentage of high school mathematics teachers and the overall sample size for the study is small. The ability to draw conclusions from tests of statistical significance is limited by the sample size. Sample size also constrains the number of variables that can be examined simultaneously in this analysis. Data are examined here only in a univariate or bivariate context.
3. Since some teachers will choose not to respond to the survey, there is the possibility that results may be biased. This bias will be present if respondents differ from nonrespondents on the survey measures.
4. High rates of items missing data affect the ability to make generalizations based on specific items.
5. Self-reported data are subject to respondent errors in comprehension, recall, and misreporting of socially desirable behavior. Additionally, respondents may lack motivation to provide accurate and complete responses.
6. Since North Carolina has the highest percentage of Nationally Certified teachers in the area of mathematics, there is some concern that the results may not transfer to the entire population of teachers across the United States who are Nationally Certified.

Chapter Two

Review of the Literature

Introduction

This study looks at the wants and needs of high school mathematics teachers who are nationally certified and high school mathematics teachers who are not nationally certified. The similarities and differences will be compared. The literature offers insight on the needs and wants of teachers. Theories offer perspectives on teachers' personalities, needs, and wants. These theories and studies supporting them are reviewed.

Theoretical Framework

The theoretical framework for this study is a combination of different theories. Herzberg's Theory of Motivators and Hygiene Factors, Maslow's Hierarchy of Needs Theory, Glasser's Choice Theory, and Bandura's Self-Efficacy Theory are all considered in this review.

Teacher Job Satisfaction

In a major literature review, Locke (1976) defined job satisfaction as the "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Reyes, 1990). Job satisfaction is also stated as "the willingness to choose teaching as one's occupation the second time" (Reyes, 1990). Direct questionnaires on job satisfaction, conducted from 1953 to the 1970s show teacher

job satisfaction running consistently under 10% (Reyes, 1990). However, it was argued that low reported levels of dissatisfaction may have been socially conditioned responses from members of an occupation told by the social order that they should derive satisfaction from work with children (Reyes, 1990). In the 1980s direct questionnaires revealed higher levels of dissatisfaction, ranging from 13% to 21% (Reyes, 1990). With the growing teacher shortage in the state of North Carolina, it is evident that this level of dissatisfaction continues to rise.

Motivation can increase teacher job satisfaction. Because motivation is psychologically complex, no general comprehensive theory exists (Ellis, 1984). The beginnings of such a theory, however, have taken shape from the writings of influential theorists such as Abraham Maslow, Douglas McGregor, Frederick Herzberg, and Edward Deci (Ellis, 1984). Maslow argues that everyone seeks to satisfy two basic levels of needs: lower level needs (physiological, security, the need for love and belonging) and higher level needs (esteem of both self and others and self-actualization or achieving one's full potential) (Ellis, 1984). These higher level needs have a significant effect on teacher job satisfaction. Herzberg distinguishes between extrinsic rewards surrounding a job (such as salaries, fringe benefits, and job security) and intrinsic rewards of the job itself (such as self-respect, sense of accomplishment, and personal growth) (Ellis, 1984). Intrinsic rewards, according to Herzberg, have been found to be more satisfying and motivating. These intrinsic rewards enhance a teacher's sense of job satisfaction and therefore, make them feel more successful and satisfied in their current teaching positions.

According to Maslow's Hierarchy of Needs theory and a study conducted by the Tennessee Career Ladder program, teachers at all levels of experience are less satisfied with their personal achievement or esteem than with their achievement of self-actualization (Gawel, 1997). Two reasons seem to account for this. Self-actualization provides the basis for self esteem and this self-actualized performance is also the basis for reputation, the esteem of others (Gawel, 1997). Herzberg's Theory of Motivators and Hygiene Factors deals with factors that affect people's attitudes about work. He concluded that such factors as company policy, supervision, interpersonal relations, working conditions, and salary are hygiene factors in the business world (Gawel, 1997). According to his theory, the absence of these hygiene factors can create job dissatisfaction, however, they do not promote job satisfaction (Gawel, 1997). He also determined that motivators were the elements that enriched a person's job; he found five factors in particular that were strong determiners of job satisfaction: achievement, recognition, the work itself, responsibility, and advancement (Gawel, 1997). Motivators were associated with long-term effects in job performance. These five factors can influence a teacher's job satisfaction and therefore, make them more successful in their job and more satisfied with what they are doing professionally.

Many studies have been conducted to determine why teachers are satisfied or dissatisfied with their careers. What factors help to raise the level of satisfaction a teacher experiences in his/her career? Does job satisfaction help to retain teachers in the field of education? What is it that teachers need and want to experience job satisfaction?

Workplace factors contribute to job satisfaction (Yee, 1990). These factors are pay, security, workload, and relations with the supervisor (Yee, 1990). The greater the organizational rewards in relation to the personal contributions the greater the satisfaction (Yee, 1990). The greater the conformity of job characteristics to an individual's needs, self-image and other roles, the greater the satisfaction (Yee, 1990).

Job stress can lead to less satisfied teachers. Many things cause teachers stress. Large class sizes, scarcity of planning time, lack of support for discipline, inadequate materials, lack of administrative support, lack of parental support, and workload are all issues that teachers have cited as causing them stress on their job (Yee, 1990).

In a study of high-quality urban teachers, interesting findings show what they need to enter and to remain in hard-to-staff schools. Urban schools report chronic teacher shortages in several areas, namely mathematics (Claycomb, 2000). It is important to have teachers who are satisfied with their jobs to keep them in the classroom and reduce the shortage. Schools with the lowest levels of teacher job satisfaction have less than desirable school buildings, inadequate supplies of learning materials, and fewer opportunities for teachers to have a voice in curricular and management decision making (Claycomb, 2000).

Another study conducted by Latham looked at factors contributing to the satisfaction of teachers with their jobs. This study identified factors that contribute to teacher satisfaction. Intrinsic and extrinsic rewards add to teacher satisfaction (Latham, 1998). School policy also plays a role in teacher satisfaction (Latham,

1998). Teachers who work in a collaborative environment experience greater job satisfaction than teachers who do not (Latham, 1998).

Another study looked at the influence of workplace conditions on teachers' job satisfaction. This study investigates teachers' job satisfaction in New Brunswick Elementary School. All teachers were included in the study. Three things were identified which positively influenced teacher job satisfaction, administrative control, teaching competence, and organizational culture (Ma & MacMillan, 1999).

The study also determined that females are more satisfied with their teaching positions than males are (Ma & MacMillan, 1999). In teaching competence, teachers believe they have the prerequisite subject-content knowledge and skills in sufficient detail to teach a course confidently and effectively (Ma & MacMillan, 1999). They need to have access to effective and current instructional strategies (Ma & MacMillan, 1999). They need to have the ability to use their subject-content knowledge to meet the standards for the course they teach (Ma & MacMillan, 1999). When looking at administrative control, it is important for teachers to be valued for their work and given a sense of substantive involvement in the operation of the school (Ma & MacMillan, 1999). Teachers like to feel professional involvement. They also like collaboration and collegiality with other staff members. This is part of the organizational culture of the school.

Meek (1998) discussed factors that promote job satisfaction. Teachers were surveyed and asked about these factors. The areas receiving lower levels of satisfaction were the manageability of work, the resources available to do work, the

professional prestige of teaching, and salaries (Meek, 1998). Meeting the needs of teachers may keep them satisfied and in the classroom.

Reyes (1990) identified correlates of teacher job satisfaction. There is a low positive correlation between satisfaction and perceptions of speaking effectively, persuading others to accept your ideas, and planning and organizing job-related activities (Reyes, 1990). A higher level of external locus of control among teachers is associated with job dissatisfaction (Reyes, 1990). Various types of stress among teachers show a consistent negative relationship with job satisfaction (Reyes, 1990). High school teachers working with high-ability students have greater satisfaction than those working with lower-ability students do (Reyes, 1990). Teachers who have strong relationships with students experience greater satisfaction (Reyes, 1990). Job satisfaction is also positively related to teacher perceptions of positive relationships with parents, more frequent contact with parents, and not feeling reluctant to approach them (Reyes, 1990).

Teachers working in rural and suburban schools tend to be more satisfied than those teachers working in urban and inner city schools (Reyes, 1990). Hierarchy of authority is negatively related to job satisfaction (Reyes, 1990). Role ambiguity and work routinization are both related to teacher career dissatisfaction (Reyes, 1990). Trust among teachers and the principal is associated with satisfaction measured by fulfillment of Maslow's need categories (Reyes, 1990). Teachers who are able to participate in decision making experience greater job satisfaction than those teachers who are not allowed to voice opinions (Reyes, 1990). Therefore, it is important to listen to today's teachers.

Staff Development

Staff development is important to the growth of teachers. In-service education, a short-term instruction generally provided at the school itself, is familiar to every teacher, usually in the form of required after-school lectures (Maeroff, 1988). Teachers complain that this approach is mechanical and ordinarily deals only with technique, ignoring content (Maeroff, 1988). In-service education is often far removed from the classroom. Teachers need to be involved in insightful professional development experiences (Maeroff, 1988). Formal or in-service education promotes sharing of ideas and interdependence among teachers (Ellis, 1984). Either kind of in-service tends to improve instructional techniques and enhance professional self-awareness (Ellis, 1984). The professional development experience should contain fresh information and new insight for teachers (Maeroff, 1988). The experience should contain ways to put this new information at the disposal of students or at least the opportunity for the time and encouragement to develop those ways (Maeroff, 1988). Professional development experiences should encourage teachers to work in teams (Maeroff, 1988). This usually fires teachers with enthusiasm and helps to keep them from being isolated when they return to their schools with new ideas (Maeroff, 1988). Professional development experiences should allow for follow-up mechanisms to lend support to the teachers throughout the school year to help in implementing the new knowledge and in keeping the enthusiasm at a high pitch (Maeroff, 1988). It is imperative that teachers get the most out of in-service experiences. Teachers must be offered educational experiences on new trends in education, ideas or methods that they do not feel

competent in teaching their students, for example, technology, and on new information as presented in the field of education.

Much research has been done in the area of staff development. It is realized by many that teachers face many challenges. Many teachers are teaching concepts they do not fully understand themselves. They may lack confidence and/or experience in teaching these concepts. Teachers may be teaching the way they were taught or the way they were taught to teach. This may not always be the way to successfully reach students in the classroom today. It is thought that professional development allows teachers to help their students. In many situations, teachers never apply what they learn in professional development experiences to classroom experiences. The content of professional learning must come from both inside and outside the learner and from both research and practice (Ideas that..., 1998). This supports the notion that supervisors should allow teachers a voice in planning, implementing, and evaluated in-service activities. Successful staff development is aligned to long-term school improvement plans (Richardson, 1998). Teachers know what professional development they will be involved in, why they are participating in it, and how it will effect student learning. Teachers should be able to collaborate and plan their professional development and the ways in which they will learn it (Richardson, 1998). Teachers should be empowered when planning, implementing, and evaluating in-service activities. The teachers know their schools and their students and should therefore, have voices in what they need to make their schools and students more successful.

Staff development programs should be grounded in the needs of the participants (Oliva & Pawlas, 1999). The plan should be developed from an assessment of the needs and interests of the persons to be served. Staff development programs should be responsive to changing needs (Oliva & Pawlas, 1999). The plan should allow for changes as conditions change and as research brings forth new knowledge. Staff development programs should be accessible (Oliva & Pawlas, 1999). The location, physical facilities, and the timing are important factors to be considered in a staff development plan. Staff development activities should be evaluated over time and be compatible with the underlying philosophy and approach of the district (Oliva & Pawlas, 1999). Evaluation data are needed in order to carry out future planning and implementation.

An evaluation system provides teachers with the necessary feedback to assess their own professional growth (Ellis, 1984). The main purpose of evaluation should be to provide information to help teachers improve their teaching performance. A good evaluation system should reflect respect for individual worth and dignity by encouraging teachers to set personal and organizational objectives (Ellis, 1984). An evaluation system should also foster imagination and creativity, recognize work well done, and involve self-appraisal of others (Ellis, 1984).

Standards

All teachers in North Carolina are held to a set of standards that they must adhere to in the classroom. All beginning teachers are held to INTASC standards. They must follow these standards in their teaching practice. Some teachers hold themselves to even higher standards than the state requires. These teachers seek

to be the best that they can be. They may seek National Board Certification, engage in rigorous staff development, be reflective practitioners, etc. Teachers who hold themselves to higher standards may have different wants and needs than those teachers who hold themselves to the required standards.

Interstate New Teacher Assessment and Support Consortium (INTASC)

The Interstate New Teacher Assessment and Support Consortium (INTASC) is a consortium of state education agencies, higher education institutions, and national educational organizations dedicated to the reform of the education, licensing, and on-going professional development of teachers (ccsso.org). Created in 1987, INTASC's primary constituency is state education agencies responsible for teacher licensing and professional development (ccsso.org). Its work is guided by one basic premise: An effective teacher must be able to integrate content knowledge with pedagogical understanding to assure that *all* students learn and perform at high levels (ccsso.org).

INTASC's mission is to promote standards-based reform through the development of model standards and assessments for beginning teachers. To carry out this mission, INTASC provides a vehicle for states to work jointly on formulating model policies to reform teacher preparation and licensing, and provides a mechanism for states to collaborate on developmental projects such as crafting new instruments to assess the classroom performance of a teacher (ccsso.org). INTASC also sponsors a series of seminars annually, bringing together state education agencies, institutions of higher education, researchers, and professional associations committed to the principles of teaching and assessment endorsed by

the consortium (ccsso.org). These seminars present the cutting edge work being carried out on these issues and provide an opportunity for formal and informal networking among the participants (ccsso.org). The INTASC core standards for licensing teachers represent those principles that should be present in all teaching regardless of the subject or grade level taught and serve as a framework for the systemic reform of teacher preparation and professional development (ccsso.org). These standards are presented in Figure 1.

National Board for Professional Teaching Standards

National Board for Professional Teaching Standards was created in 1987. It was created as a result of the Carnegie Forum on Education and the Economy's Task Force on Teaching as a Profession released document, *A Nation Prepared: Teachers for the 21st Century*. NBPTS is an independent, nonprofit, nonpartisan and non-governmental organization (nbpts.org). Its mission is to advance the quality of teaching and learning by: maintaining high and rigorous standards for what accomplished teachers should know and be able to do, providing a national voluntary system for certifying teachers who meet those standards and advocating National Board Certification in American education to capitalize on the expertise of National Board Certified Teachers (nbpts.org). National Board Certification was created so that teachers, like professionals in other fields, can achieve distinction by demonstrating that they meet high standards for what accomplished teachers should know and be able to do (nbpts.org). National Board has five core propositions that teachers must accomplish. (See Figure 2).

Figure 1 – INTASC Standards

Figure 2 – National Board for Professional Teaching Standards

The National Board concentrates education reform efforts on the heart of education – the teacher. It believes the single most important action the nation can take to improve schools and student learning is to strengthen teaching (nbpts.org). As the founding chair Governor James B. Hunt, Jr. of North Carolina succinctly states, "Improved student learning depends on one thing to start with - a quality teacher" (nbpts.org).

A National Board certificate will attest that a teacher is accomplished as judged as judged by his/her peers, makes sound professional judgments about students' best interests, and acts effectively on those judgments (nbpts.org). Offered on a voluntary basis, National Board Certification complements, but does not replace, state licensing (nbpts.org). While state-licensing systems set entry-level standards for novice teachers, National Board Certification establishes advanced standards for experienced teachers (nbpts.org). National Board Certification also represents an opportunity for professional growth unlike any other now available to teachers (nbpts.org). Teachers across the nation are able to gauge their skills and knowledge against objective, peer-developed standards of advanced practice. And as teachers hone their professional skills, their students reap the greatest rewards (nbpts.org).

The National Board Certification process encourages, actually demands, that teachers reflect on their teaching practices. It encourages them to examine what they are doing in the classroom. Teachers must look at what they are teaching, how they are teaching it, why they are teaching it, and what they can do to improve their teaching the next time they teach a particular concept. It is very important for

teachers to participate in reflective practice. By doing this, teachers will often improve their teaching practice. This will help to ensure quality teachers in the classroom.

Several studies have been conducted with regards to National Board Certification. A national survey of certification candidates conducted in September 2001 demonstrates that the National Board Certification process has many positive effects on teachers, schools, and communities (nbpts.org). In addition, the results of the survey show the certification process helps teachers improve their teaching and their interactions with students and parents (nbpts.org). The following findings emerged from the survey. It was found that ninety-two percent of the candidates said that they believe the National Board Certification process has made them a better teacher (nbpts.org). The second finding showed that ninety-six percent of respondents rated the National Board Certification process as a(n) “Excellent”, “Very Good”, or “Good” professional development experience (nbpts.org). The survey also found that participation in the National Board Certification process equips teachers to create stronger curricula (89%), improves their abilities to evaluate student learning (89%), and helps them develop a framework to use state content standards to improve teaching (80%) (nbpts.org). The fourth finding was that participation in the National Board Certification process enhances teacher interaction with students (82%), parents and guardians (82%), and helps to improve collaboration with other teachers (80%) (nbpts.org). The fifth finding was that there is a level of awareness in schools (68%) and school districts (81%) of teachers who are candidates for National Board Certification and those who have achieved certification (nbpts.org).

The final finding of the survey was that candidates for National Board Certification are receiving high levels of support from their teaching colleagues (86%), their principals (80%), and district administrators (68%) (nbpts.org). Therefore, National Board Certified teachers may have different needs and wants than those teachers who are not Nationally Certified.

Some critics of National Board Certification do exist. With an approximate 50% success rate for first time candidates, it is no surprise that there are some that question the validity of the certification process. Burroughs suggests that there is a strong connection between writing success and certification success (Burroughs, 2001). He feels that National Board Certification “is as much an evaluation of a teacher’s writing about his or her teaching as it is an evaluation of the teaching itself (Burroughs, 2001). Burroughs conducted a case study in which he looked at two teachers who were striving for National Board Certification in 1995-96. One candidate received National Board Certification while the other candidate did not. Burroughs had been observing these two teachers among others as they were pursuing this certification. He felt that the writing hindered one of the teachers from getting certification. This teacher wrote more about her students rather than her own teaching. She felt that she could have done better if she had been observed rather than writing about her classroom experiences. Burroughs feels that National Board does not communicate to candidates the importance of rhetoric (Burroughs, 2001). He feels that the board should include in its standards the value of the ability to articulate one’s own practice (Burroughs, 2001). “Because language is implicated in all standards, the National Board for Professional Teaching Standards and the

makers of other standards like those of the National Council for Accreditation of Teacher Education and the Interstate New Teacher Assessment and Support Consortium would go a long way toward creating more complete performance standards by acknowledging the importance of language performance in demonstrating accomplished teaching (Burroughs, 2001).

Reflective Practice

'Reflective practice' is an active, proactive, reactive and action-based process, defining a set of skills concerned with understanding and dealing with real, complex and difficult situations (Bright, 1996). This process and its skills enable, rather than obstruct, efficient and competent action. Rather than 'reflective practice' being seen as impractical, passive or irrelevant to action, it can be regarded as centrally important and relevant to the understanding of ongoing action (Bright, 1996). If an adult educator is engaging in efficient reflection, as he/she goes through his/her day, with its numerous ongoing, contingent and dynamic decisions and actions, 'reflective practice' can be conceived as the essential process which facilitates and organizes this seeming flux of events and enables the achievement of highly competent action (Bright, 1996).

Because the professional is the receptacle of information concerning a given situation, the reflective process is essentially about increasing the professional's awareness of factors which influence the planning of his/her action (Bright, 1996). It is only by becoming aware of this information, and its quality and role in the design of his/her action, that the professional will realize alternative, and possibly better, ways of interpreting, interacting and dealing with problematic client situations (Bright,

1996). Again, this is a relative quality and means increased awareness relative to that, which already exists (Bright, 1996).

Reflective practice is very important in public schools today. Teachers need to constantly rethink their teaching practices. The life force of teaching practice is thinking and wondering (Hole, 1999). Teachers constantly think of moments of the day that touch or puzzle them, and they question decisions that they made. During these times of reflection, they may realize when something needs to change.

Teachers need to constantly self-reflect. They should decide what to reflect on. They should describe the situation with who, what, when, and where. They should then analyze the situation asking why and how. They should decide if their practices were effective and whether or not they should do things differently. (See Figure 3). INTASC and NBPTS encourage teachers to be reflective practitioners. Their standards demand this from teachers. When teachers look at what they need and want to do their best work, they are forced to reflect on their classroom practices. Effective teachers are willing to change their practices to fit the needs of their students.

The Career Cycle

The career cycle used in the survey is taken from the Life Cycle of the Career Teacher model. This model is based on the belief that all teachers can reach a standard of excellence within the first 5 years of teaching and, with the appropriate support, continue to enhance their abilities throughout their careers (Steffy et al., 2000). The Life Cycle of the Career Teacher model describes a progression of developmental phases and the positive growth that results when teachers strive for,

Figure 3 – Reflective Practitioner

achieve, and maintain a standard of excellence that results in caring, qualified and competent teachers for all students (Steffy et al., 2000). The model prescribes for each stage on the Life Cycle the enrichment that comes from providing teachers with the support they need (Steffy et al., 2000). According to Steffy, the stages of the Life Cycle are influenced by such factors as individual development, social context, and most importantly, choice. Choices that teachers make cause them to either grow, which is caused by the process of reflection and renewal, or withdraw, which is caused by the absence of this process (Steffy et al., 2000). This idea of reflection and renewal is the foundation of the certification process offered by the National Board of Professional Teaching Standards. The process of national certification forces the teacher to reflect on classroom practices and decide on factors that could improve his/her own teaching.

Several basic assumptions are supported by the Life Cycle of the Career Teacher. They are as follows:

1. Teacher development is directional and impelled by the need to improve.
2. The level of development in the life cycle of teaching is a function of personal characteristics, school contexts, support systems, and solid preparation.
3. A community of inquiry about teaching encourages learning among teachers and students.
4. Teaching excellence is influenced by one's ability to learn, do scholarly work, and commit to growth.
5. Situation or context is a powerful force for growth and/or withdrawal.

6. Excellence in teaching depends upon the centrality for caring- for students, self, ideas, and the profession.

The Life Cycle of the Career Teacher model offers a developmental continuum useful for promoting efficacy as a teacher (Steffy et al., 2000). It presents a vision of good teaching practice based on experience and transferring knowledge (Steffy et al., 2000). This model presents the process of how a teacher grows as a professional while moving along the continuum.

The Life Cycle of the Career Teacher model has six stages. The first stage of this model is the novice teacher. This stage begins when preservice teachers are involved in practicum experiences (Steffy et al., 2000). This stage is not considered in this study since teachers with at least three years experience are the target population.

The second stage is the apprentice teacher. This stage starts when the teacher begins planning and delivering the instruction on his/her own and continues until integration and synthesis of knowledge, pedagogy, and confidence emerges (Steffy et al., 2000). This stage is presented in this study, because some teachers may have three years of experience and still feel that they are at this stage.

The third stage of the Life Cycle is the professional teacher. This phase begins as a teacher's self-confidence grows (Steffy et al., 2000). Most school faculties have large numbers of professional teachers (Steffy et al., 2000). They are competent, solid, and dependable (Steffy et al., 2000). They are teachers through and through. They have no desire to leave the classroom. They seek help and assistance from other teachers, value opportunities to observe colleagues'

innovative practices, and enjoy taking part in meaningful staff development (Steffy et al., 2000).

The fourth stage of this model is the expert teacher. These teachers have reached the highest standards of teaching and often view themselves as members of a profession whose boundaries extend beyond the classroom (Steffy et al., 2000). They meet the expectations required for certification by the National Board of Professional Teaching Standards even if they have not been through the process (Steffy et al., 2000). These teachers exhibit proactive and anticipatory teaching styles (Steffy et al., 2000). Expert teachers are on a continual search for professional growth (Steffy et al., 2000).

The fifth stage of the Life Cycle of the Career Cycle model is the distinguished teacher. This teacher possesses more than extraordinary teaching skills and exceeds the definition of exemplary teacher (Steffy et al., 2000). Research is lacking on this stage.

The final stage is the emeritus teacher. This teacher has formally retired but, due to his/her expertise and devotion, continues to be an active and involved contributor to the profession (Steffy et al., 2000). These teachers serve as wonderful mentor teachers to both beginning and veteran teachers.

As a teacher grows both personally and professionally, his/her stage of the career cycle changes. Staff development may help the teacher to move to a different stage. Experience may change the stage. Teachers who are self-reflective may move along the career cycle at a more rapid pace than those who are not self-

reflective may. Teachers with higher self-efficacy may place themselves higher on the career cycle (See Figure 4).

Bandura's Self-Efficacy Theory

Bandura introduced this theory as one of behavioral change. It stated that an individual's expectations for success determine the behavioral response; including the following: a) the individual's determination to initiate a specific behavior, b) the level of intensity of the response, and c) perseverance and coping behaviors when confronted with obstacles (Enderlin-Lampe, 1997). Bandura also believed that self-efficacy depicts an individual's belief in their abilities to successfully engage in behaviors within their environments (Enderlin-Lampe, 1997). To enhance teacher self-efficacy, teachers must believe that their behaviors can affect the education of their students. When teachers feel that they have had a positive impact on the education of their students, they experience success as teachers and a personal satisfaction of giving students their best. Bandura also perceived self-efficacy as one's judgment of one's capabilities to organize and execute courses of action required to attain designated types of performances and not concerned with the skills one has but with judgments of what one can do with whatever skills one possesses (Weasmer & Woods, 1998).

Bandura proposed self-efficacy as a belief system that is causally related to behavior and outcomes (Driscoll, 2000). That is, people make judgments about their ability to perform certain actions required to achieve a desirable outcome (Driscoll, 2000). Then, based on their judgments, they proceed or not to engage in those actions (Driscoll, 2000). In addition to self-efficacy beliefs, people have expectations about

Figure 4 – The Career Cycle

what actions will produce the most desirable outcomes (Driscoll, 2000). These statements indicate many reasons why teachers' self-efficacy is important to students and their academic achievement.

In an educational setting, teaching efficacy can be defined as the perceived degree of effectiveness of instruction on learning (Weasmer & Woods, 1998). In classrooms where teachers have high levels of efficacy, high levels of learning occur (Weasmer & Woods, 1998). Teaching efficacy exists on two levels: general teaching efficacy and personal teaching efficacy (Weasmer & Woods, 1998). General teaching efficacy refers to teachers' perceptions that teaching can influence student learning. Bandura refers to this as "outcome expectancy", whereby a person believes, "This can be done" (Weasmer & Woods, 1998). A positive sense of general teaching efficacy suggests that students can learn regardless of their backgrounds, their friends, their family situations, or their capabilities. Teachers who believe students cannot learn because of one of these are exhibiting a low sense of general teaching efficacy.

Personal teaching efficacy is an individual teacher's belief in his or her own effectiveness, a perception that may be situation specific (Weasmer & Woods, 1998). For example, a high school mathematics teacher who is very comfortable using a graphing calculator and feels competent in teaching applications of the calculator to his/her students exhibits a high personal teaching efficacy. On the other hand, a teacher who is using a computer program for the first time to teach quadratic equations may exhibit a low personal teaching efficacy because he/she

may not feel comfortable using the computer program much less teaching students a new concept using this program.

Bandura indicated that self-efficacy is often a better predictor of behavior than is past performance (Weasmer & Woods, 1998). Therefore, administrators should take care not only to examine prior teaching successes but also to recognize individuals with high personal teaching efficacy when hiring new teachers. This is very important to the achievement of the students in the school. If the principal is looking to hire teachers who will try new things and take risks in the classroom, then it is important for the teacher to have a high personal teaching efficacy. Teachers with a low personal teaching efficacy tend to want to do things in their classrooms that they feel comfortable doing. This may mean that they teach the same lesson the same way year after year with no variation. They are usually not reflective in looking at their teaching practices. In schools today, we need teachers who are open to change, because society is constantly changing, and schools need to recognize these changes. Otherwise, students will not be prepared for the real world when they complete their schooling.

In the 1960's, Bandura gave birth to observational learning. He was initially interested in learning outcomes. His key concept was self-efficacy. He said that it is not just observing these events but being capable of producing the desired behavior. He believed that by doing this behavior a person would reach an accomplishment. If you reach an accomplishment, it enables you to begin to believe you can have a positive effect on the environment. When teachers have a positive sense of self-efficacy, they believe that they can have a positive effect on student achievement.

The role of teachers' self-efficacy in teaching has attracted considerable attention in recent educational research. In this dissertation research, the wants and needs of teachers in their current teaching professions will be examined. Teacher self-efficacy plays an important role in the identification of teachers' wants and needs.

Numerous studies support Bandura's theoretical model and indicate a strong relationship between perceived self-efficacy and actual performance (Enderlin-Lampe, 1997). One important idea that increases teacher self-efficacy is shared decision-making in schools. Administrators make it possible for teachers to share in the decision-making in their schools. They either encourage teachers to have a voice or they discourage teachers from voicing their opinions. Teacher self-efficacy is a critical component in the restructuring of schooling, and teacher attributes of self-efficacy are a major element in productive schooling (Enderlin-Lampe, 1997). Therefore, it is very important for school systems, schools, and administrators to do support teachers and aid in increasing their self-efficacy.

Research conducted by Ashton and Webb in 1986 indicates that the motivation of teachers can greatly increase emotional rewards that teachers indicate are so satisfying yet so infrequent in the current system (Enderlin-Lampe, 1997). Ashton and Webb also examined the independent relationships of teachers' sense of professional efficacy and personal efficacy to gains in student achievement in different subject areas. They found statistically significant relationships between levels of professional efficacy and gains in mathematics achievement (Reyes, 1990). Teacher efficacy has also been associated with change in teacher practice as the

result of staff development and planned change initiatives (Reyes, 1990). Positive relationships of teacher efficacy to teacher involvement in decision making and to collegial support of classroom innovations were also found (Reyes, 1990).

Research by Denham and Michael suggest that teachers frequently believe that they are not competent enough to have an integral part in shared governance (Enderlin-Lampe, 1997). Research by Ruscoe and Whitford in 1991 reported findings regarding teacher attitudes toward efficacy and empowerment and the learning environment in their schools. Their work indicated that teachers want to be involved in the restructuring of schooling (Enderlin-Lampe, 1997). Ruscoe and Whitford attribute an increase in sense of efficacy and more positive attitudes and work environment to the following: supportive administration, collegial faculty, and a major focus on students (Enderlin-Lampe, 1997). Therefore, it is important for administrators to empower their teachers, to let teachers know that their opinions are important, and to let teachers have a voice in decisions that affect them and their students. This is an administrative support need that is important to teachers.

By encouraging collegiality among teachers, purposes can be unified and enthusiasm heightened. Teachers with positive personal teaching efficacy may influence those teachers who lack confidence in their own effectiveness (Weasmer & Woods, 1998). When schools provide opportunities for the exchange of pedagogical ideas, teachers who are minimally involved in the profession outside their classrooms encounter information that their more active colleagues routinely share (Weasmer & Woods, 1998). This may help to build these teachers' self-efficacy and in turn improve student achievement. Administrators can also encourage this.

Their support is needed to help teachers develop collegial relationships with their co-workers.

A teacher's work environment may have a positive or negative effect on his/her self-efficacy. Clearly, not all work environments are ideal havens for enhancing personal teaching efficacy (Weasmer & Woods, 1998). Administrators often inhibit teachers' sense of personal efficacy by stymieing efforts at innovation or failing to acknowledge staff accomplishments (Weasmer & Woods, 1998). The principal may assume the role of evaluator or of mentor; in either case, a tone is then set that affects all personnel and their teaching self-efficacy (Weasmer & Woods, 1998). Hip found significant relationships between leadership behaviors of principals and teachers' sense of efficacy (Weasmer & Woods, 1998). Because a high level of personal teaching efficacy leads to increased confidence and competence, it is vital that administrators serve as positive models and provide contingent rewards (Weasmer & Woods, 1998). Administrators can enhance teachers' self-efficacy, which in turn enhances student achievement in their schools.

Motivation can enhance a teacher's sense of self-efficacy. Recent studies have shown fairly conclusively that teachers are motivated more by intrinsic than by extrinsic rewards (Ellis, 1984). Pastor and Erlandson conducted a survey which found that teachers perceive their needs and measure their job satisfaction by factors such as participation in decision-making, use of valued skills, freedom and independence, challenge, expression of creativity, and opportunity for learning (Ellis, 1984). They concluded that high internal motivation, work satisfaction, and high-quality performance depend on three critical psychological states: experienced

meaningfulness, responsibility for outcomes, and knowledge of results (Ellis, 1984). In a survey conducted by Brodinsky and Neill, a majority of school administrators and teachers cited three policies that effectively improved morale and motivated their staffs: shared governance, in-service education, and systematic, supportive evaluation (Ellis, 1984). Shared government, or participatory management, enhances teachers' professional status and their "ownership" in the planning and operation of the school (Ellis, 1984). Thus shared governance gives teachers a vested interest in school performance and also promotes a harmony and trust among teachers and administrators (Ellis, 1984).

Two of the main issues surrounding teachers and their ability to be change agents have to do with the use of their time and the extent to which teachers shape instructional philosophy and content rather than have it dictated to them (Maeroff, 1988). Teachers need the space and the time to plan (Maeroff, 1988). With the increasing enrollment of students in North Carolina's public schools, teachers are often faced with the dilemma of having their rooms used by other teachers during their planning periods. It is important for teachers to have space during their planning periods. Many teachers waste a lot of their precious time moving their belongings to the break room, media center, etc. to do their planning. Teachers need a quiet place to work. Teachers also need time to work. Many teachers are burdened with meetings, duties, and paperwork during their planning periods. Ten to fifty percent a teacher's time is spent on noninstructional duties – recording test scores, monitoring the halls, running copying machines, etc. (Maeroff, 1988). Therefore, teachers may not have enough time to spend developing effective

lessons for their classes. Administrators should consider this need of teachers. Teachers need to work cooperatively with colleagues (Maeroff, 1988). Administrators could support this need by giving teachers who teach the same subjects common planning periods. For example, Geometry teachers could all have first period planning.

Teacher morale may have a positive or negative effect on efficacy. Morale has been thought of as a feeling, a state of mind, a mental attitude, and an emotional attitude (Lumsden, 1998). Morale is similar to self-efficacy in that it is a state of mind. It is how a person perceives himself or herself. Many factors affect teacher morale, and therefore, can also affect their job success and satisfaction. A principal's ability to create a positive school climate and culture can affect teacher morale (Lumsden, 1998). A recent report on job satisfaction among American teachers identified more administrative support and leadership, good student behavior, a positive school atmosphere, and teacher autonomy as working conditions associated with higher teacher satisfaction (Lumsden, 1998). Favorable workplace conditions were positively related to teacher's job satisfaction regardless of the teacher's background or where the teacher taught (Lumsden, 1998). The study also found that teachers in any school setting who receive a good deal of parental support are more satisfied than teachers who do not (Lumsden, 1998). A weak relationship was found between teacher satisfaction and salary and benefits (Lumsden, 1998). Teachers' perceptions of students and student learning can also affect their morale as well as their efficacy. Because of their relative isolation from other adults, teachers have little opportunity to share their successes with

colleagues and administrators which results in a greater reliance on student responsiveness for teachers' professional satisfaction (Lumsden, 1998). Stress also affects teacher morale. Feeling overly stressed can result in erosion of one's idealism, sense of purpose, and enthusiasm (Lumsden, 1998). Teachers today feel more and more stress to teach students more and more content. This stress may have a negative effect on teachers' efficacy. Teachers are being pressured more and more to make sure that students have high scores on End-of-Grade examinations. This type of stress can make teachers feel less successful in and satisfied with their careers.

The importance of teacher self-efficacy cannot be overlooked. With the increase in teacher shortage, everything must be done to keep good, qualified teachers in the profession. It is believed that teachers with high self-efficacy will remain in the profession longer than teachers with low self-efficacy. Much can be done to help teacher achieve a high level of efficacy.

Teachers with a strong sense of self-efficacy will be more effective in the classroom, and therefore, more successful in and satisfied with their teaching careers. Teachers with National Board Certification may exhibit a high sense of self-efficacy. To begin with, they are satisfied with their teaching to the extent that they feel they can go through this rigorous process. They feel that their teaching practice is strong enough to become Nationally Certified. If they did not, they would not participate in this self-reflective process. They believe that they are good teachers and want to show others that they are. At the same time, they believe they could

improve on their practice and the National Board Certification process helps them to do just this.

Teachers who have a high sense of self-efficacy are usually effective in the classroom. When teachers are effective in their careers, they may be more satisfied with what they are doing. Therefore, they may remain in the field of education. With the shortage of teachers in the state of North Carolina, it is important to help teachers raise their sense of self-efficacy. Participating in the National Board Certification process could be one way to do this.

Glasser's Choice Theory

Teachers make many decisions and choices everyday in and out of their classrooms. Many of these are conscious while others are unconscious. Choice theory reveals, far better than any existing theory, both why and how all people behave (Glasser, 1998). This theory reveals five basic human needs: survival, power, love, fun, and belonging (Glasser, 1998). According to this theory, our behavior is almost always motivated by a stimulus that exists outside of ourselves (Glasser, 1998). It is always what we want at the time that causes our behavior (Glasser, 1998). The stimulus may seem to be the cause, but it never is. For this reason, it is important to identify the wants and needs of high school mathematics teachers. It is imperative to fulfill their needs. With the increasing shortage of quality mathematics teachers, it is necessary to keep the qualified teachers happy and doing an effective job. We cannot risk losing quality mathematics teachers because they do not have what they need to do their job. All living creatures are always motivated by the basic needs of their species (Glasser, 1998). While some

people have stronger needs than others, for example, some people seem to want more love or more power than others, in most cases this difference is not significant (Glasser, 1998). For all practical purposes, there are few significant differences among us in what we need (Glasser, 1998). We differ in how successful we are in getting what we need (Glasser, 1998).

Administrators need to let teachers know that their choices are important and that they are concerned about them and their needs. For those in the position of managing people, knowledge of needs is more than helpful, it is essential (Glasser, 1998). “Bosses” refuse to accept that they cannot “motivate” their teachers with what they believe will cause the workers pain or give them pleasure, especially when they also believe that what they are asking is good for the workers (Glasser, 1998). Leaders, on the other hand, know that they cannot make the workers work hard if the work is seen as unsatisfying or they are seen as unconcerned about the workers needs (Glasser, 1998). Teachers need to know that their administrators support and respect the job that they are doing. “Leaders” try constantly to empower teachers by listening to what they have to say (Glasser, 1998). “Bosses” are less secure. They fear that if they listen too much to their teachers, they will lose some of their power (Glasser, 1998). By remaining aloof, they try to make sure that the teachers do not lose sight of the fact that they are in charge (Glasser, 1998). Teachers do not usually want to run the school, but, driven by their needs for power and freedom, they want some say as to how they do their work (Glasser, 1998). Teachers need “leaders” rather than “bosses” for administrators.

Choice theory is a descriptive term because we try to control our own behavior so that what we choose to do is the most need-satisfying thing we can do at the time (Glasser, 1998). Although we can only control our own behavior, it is obvious that much of what we choose to do is an attempt to control others (Glasser, 1998). Choice theory, therefore, is the explanation of this constant attempt to control both ourselves and others, even though in practice we can control only ourselves (Glasser, 1998).

It is important for administrators to believe in choice theory. It may be easier to keep teachers happy in their professions, and therefore, keep them in the classroom. The shortage of effective teachers is not a problem that can be solved by a new structure. It is caused by how we train and manage teachers and can only be solved by improving how we do this (Glasser, 1998). Teachers who are effective managers will be effective in any school setting, but they will be less effective if they are managed differently from the way they manage students (Glasser, 1998). If through better administration we can increase the number of effective teachers, we will soon see a wide variety of structural improvements in many schools, improvements made possible and brought about by the increased numbers of more confident, more professional teachers (Glasser, 1998).

Chapter Three

Methodology

Type of Study

This study involved the use of both quantitative and qualitative research methods in order to fully address the study's analytic goals. First a survey was sent to 130 National Board Certified high school mathematics teachers and 130 Non-National Board Certified high school mathematics teachers in North Carolina to identify the types of support and professional development activities that they feel make them successful and satisfied in their current positions. Guided by previous literature, a set of hypothesized associations between Board certification and key factors related to job success and satisfaction were tested using a Pearson chi-squared test of independence. Second the quantitative data from the mail survey component of this research design was supplemented with qualitative data from semi-structured follow-up telephone interviews which were conducted with a subset of the mail survey respondents (n=20). These follow-up interviews were designed to gather richer, more detailed information about why specific professional development opportunities and activities and support systems seem to be important for teacher job satisfaction.

Sample

This study utilized a stratified sample of 260 North Carolina high school mathematics teachers. The sample was stratified by Board certification with an

equal allocation of the sample across two strata, Board Certified (n=130) and Non-Board Certified (n=130). An equal allocation of sample members across strata maximizes the ability to make inferences in comparisons between the two groups, which was clearly an important part of this analysis.

Board Certified and Non-Board Certified teachers were selected from separate sampling frames. Both of these frames contained an accurate and complete listing of eligible teachers at the time of sample selection. The National Board Certified teachers' names and school addresses were obtained through the National Board for Professional Teaching Standards' website. Currently, there are 3,658 National Board Certified teachers in the state of North Carolina, and 174 of those 3,658 North Carolina teachers hold an Adolescent and Young Adulthood Mathematics (high school mathematics) certificate, the area of interest for this study. Initially the entire population of National Board Certified high school mathematics teachers was to be used. However, 44 of these teachers were no longer in the classroom and, since many of the survey questions required current experience in a classroom setting, it was clear that these teachers should not be included as part of the target population for this study. Therefore, the target population and sample for this study was limited to the 130 National Board Certified high school mathematics teachers who were teaching high school mathematics in North Carolina at the time the sample was drawn.

An equal number of Non-National Board Certified high school mathematics teachers (n=130) were randomly sampled from a frame of all eligible teachers provided by the North Carolina Department of Public Instruction (DPI). A "quasi"-

systematic sample of 130 Non-Board certified teachers designed to match the percent of Board certified teachers in 3 North Carolina regions (Mountains, 13%; Piedmont, 72%; Coastal Plain, 15%). These teachers were selected from the DPI frame. Every 26th teacher was selected until the desired distribution of A teachers in the Mountains, B in the Piedmont, and C in the Coastal Plain had been achieved. The three regions were used for several purposes. To generalize to the state, a final sample which accurately reflects the geographical distribution of teachers within the state was desirable and stratification by the three regions helped guarantee geographic representation. It was hypothesized that geography might play an important role in assessing some of the factors contributing to job success and satisfaction among North Carolina teachers, so regional estimates were of interest. For example: Are there perceived notions that resources are greater in the eastern part of the state? Do greater resources have any relationship to more administrative assistance and/or more job satisfaction? However, given the research questions addressed here, analyses by region were not conducted.

Twenty semi-structured telephone interviews were conducted following the survey to further investigate some of the quantitative findings from the mail survey. Teachers who indicated on the survey that they would be willing to be contacted for additional comments and questions were eligible for selection as part of the follow-up interview sample. Teachers who were chosen for the follow-up interview were initially contacted by a consent letter, which asked them for a time to be interviewed, and a phone number. The investigator sent letters and made follow-up calls until the

desired number of interviews by region and Board certification had been achieved (see Table 3.1).

Table 3.1 Number of Follow-Up Interviews by Region and Certification (n=20)		
	Board Certified	Non Board Certified
Mountains	2	2
Piedmont	7	7
Coastal Plain	1	1

As seen in Table 3.1, two interviews were conducted with National Board teachers and two interviews were completed with Non-National Board teachers in the Mountains. One interview was with a National Board and one interview was with a Non-National Board teacher in the Coastal Plains. Seven interviews were with National Board teachers and seven were with Non-National Board teachers in the Piedmont.

Instrumentation

Developed by Dr. Barbara Day at the University of North Carolina at Chapel Hill, a 113-item, self-administered questionnaire was used to investigate the similarities and differences in the wants and needs of High School Mathematics National Board and Non-National Board teachers as related to their job satisfaction and success rate in their current positions, their perception of personal attributes and their place on the career cycle. (The survey instrument appears as Appendix A.)

The 113-item survey consisted of four categories of questions. The four categories were *Administrative Support Needs*, *Professional Development Needs*, *Career Cycle* and *Professional and Personal Characteristics*. The two *Needs* sections and the first part of the *Professional and Personal Characteristics* section

consisted of 93 Likert scale items. Thirteen items at the end of the survey inquired about general personal information such as gender, National Board status, age, ethnicity, years of experience, etc. There were four questions that asked teachers to identify their most important needs in an open-ended format. These questions were “List your three most important professional needs as a teacher,” “List the three most important changes that are needed to support your best teaching,” “If you plan to leave the teaching profession within five years, list the three most important reasons for your decision,” and “If you plan to remain in the teaching profession more than five years, list the three most important reasons for your decision.” The fifth and final qualitative question was “To what extent do you believe you actually have what you need to support your best teaching?” One question on the survey asked participants to choose a category that best describes their current teaching phase on the career cycle. Finally, the last survey question instructed participants to check a box if they were interested in participating in a telephone interview.

A five-point Likert scale was used for many of the survey items. When asking about administrative support and professional development needs, a five denoted “contributes significantly” and a one denoted “does not contribute.” In the Professional and Personal Characteristics section, a five was labeled “Describes Accurately” and a one was characterized as “Does Not Describe”. The five positions on the scale were not considered equally spaced, thus, choosing a four did not mean twice as much as choosing a two.

In completing this survey, respondents were assured that all responses would be held confidential. A number was assigned to each questionnaire but this number

was only used to track the progress of the case and to send follow-up reminders. This tracking number also proved useful in identifying those sample members who agreed to be contacted for a follow-up interview. Sample member contact information (e.g., name, address) was stored with a link to the tracking number in a file kept separate from the survey data to minimize the risk of a confidentiality breach. Furthermore results were presented in a way that did not allow any individual respondent to be identified by name, school or otherwise. For example, quotes from individual telephone interviews were only used if they did not reveal any information that might uniquely identify the respondent. If the respondent mentioned his or her school name or city name, that information was not included in the presentation of study results.

Validity and Reliability

Doctoral students under the supervision of Dr. Barbara Day have investigated the internal validity of the scales used in this instrument and performed several pilot studies with small samples of teachers. Using the data of 417 participants (Choi, 2000) Cronbach's alpha was calculated to find the reliability of the subscales. The reliability ranged from 0.66 to 0.90. Furthermore, the reliability coefficient for the subscale for job satisfaction and job success was 0.80, and the alpha value for the personal characteristics/attributes subscale was 0.76. Since many of the measures included in this survey are subjective and cannot be compared to a "gold standard" or true value, validity is more difficult to assess. However, some insight into whether respondents were providing accurate data was gained by examining actual survey

responses (e.g., questions consistently left blank, unusual frequency distribution for a particular item) and assessing respondent feedback in the follow-up interviews. If there was evidence suggesting that survey data were being reported inaccurately, the measures in question were excluded from the analysis.

Procedures

The data collection protocol for the mail component of this study was based on Dillman's Total Design Method (TDM) (Dillman, 2000). The TDM integrates a number of techniques to encourage survey response, specifically the use of multiple follow-up attempts to convey the importance of respondent participation. About a week before the survey mailing, the investigator sent an advance letter to the 260 teachers in the sample. The letter included the following information: who is conducting the research, why the individual was chosen to participate, the time commitment involved in filling out the survey and the purpose of the study. The investigator included her name, email address, and phone number in case any participant had questions or concerns about the survey or the overall study. The introductory letter also included information about confidentiality and indicated that participation was voluntary. (The introduction letter appears as Appendix B.) A week after mailing the introductory letter, the questionnaire packets with the survey and an additional cover letter including a postage-paid return envelope were mailed out requesting return in a two-week period. (The cover letters for the initial mailing and follow-up contacts appear as Appendix C.) After the two-week period had passed, an additional survey with a slightly stronger worded cover letter was mailed immediately to the non-respondents. In a final effort to maximize response, a third

cover letter and survey was sent to non-respondents. This protocol of an advance letter and three mailings achieved a 57% return rate. According to Gall, Borg & Gall (1996), the average response rate for mail surveys is 48%. Keninger (1986) also observed in a meta-analysis of studies that response rates of 40% to 50% were common for mail surveys.

Once the final follow-up was complete, requests for participation in the telephone interview were initially made with a letter. (The consent letter for the telephone interview appears as Appendix D.) When the telephone consent letters were signed and returned, a random sample of those in each region was contacted until two National Board Certified teachers and two Non-National Board Certified teachers in the Mountains, one National Board Certified teacher and one Non-National Board Certified teacher in the Coastal Plains, and seven National Board Certified and seven Non-National Board Certified teachers agreed to participate in a telephone interview, totaling twenty telephone interviews. Interview questions were drafted to address the commonalities and differences between Board certified and Non Board Certified teachers found in the mail survey results. Questions were then scripted using a sample script from Gall, Gall, and Borg (1996). (This script appears as Appendix E.) The script served only as a guide during the interview. The investigator followed up with additional questions based on the information offered by the respondent during the interview.

The average length of the telephone follow-up interview was 20 minutes. (A copy of the interview guide is included as Appendix E.) Each interview was audiotaped and transcribed by the study investigator to facilitate later analysis.

Data Analysis: Quantitative Methods

The next phase of the project involved data entry and analysis of the mail survey results. Using funds from a National Board grant, statisticians from the University of North Carolina at Chapel Hill Survey Research Unit assisted in the data entry and analysis activities. Trained data entry staff used Blaise, a Windows-based computer software program, to enter the survey data. In order to reduce data entry error, data entry “checks” existed. For example, age could only be entered as a value from 20 to 99 and the allowable values for the 5 point scale items consisted solely of 1, 2, 3, 4, 5 or missing. Each survey was entered twice, by independent keyers. Once data entry was complete, the data from Blaise were converted into a SAS database. SAS (which formerly stood for Statistical Analysis System) is a statistical analysis software package produced by the SAS Institute and is widely used in survey data analysis. Survey Research Unit statisticians prepared a SAS program that compared the data entered by the first keyer with the data entered by the second keyer. Any discrepancies between the two keyers were resolved in SAS before beginning the analysis. (A. Bowers, personal communication, July 2002).

Prior to the analysis phase, the investigator and SRU statisticians developed an analysis plan detailing the specific analyses of interest. This plan guided the quantitative analysis phase of the project.

The general approach of the analysis was as follows. Initial one-way frequencies or descriptive statistics (e.g., mean, median) were computed for all variables. At this point, items with heavily skewed distributions (e.g., 75-80% of responses concentrated in two response categories) were excluded from further

analysis. This significantly reduced the number of variables that were available for additional analysis in every section, except the Professional Development Needs section. To limit the number of variables examined in subsequent analysis of the Professional Needs section, a Spearman rank correlation was computed between items that showed an acceptable level of variability as defined above (Stokes, Davis and Koch, 2000). The Spearman rank correlation indicates the strength of the association between two ordinal measures. Items that correlated moderately (defined as a correlation of .4 or higher) with several of the professional development items were identified as possible variables to be examined in later analyses.

The investigator and SRU statistician then examined the reduced set of variables from each of the questionnaire sections (e.g., Administrative Support Needs, Professional Development Needs) and determined if there was a theoretical justification for a difference between NBCTs and Non-NBCTs for each item. Other potential explanatory variables such as teaching experience and teacher's level of education were also considered at this stage. If there was a theoretical justification for a proposed bivariate relationship (e.g. Board certification and job satisfaction) then the hypothesized association was incorporated as part of the analysis plan.

A Pearson's chi-squared test of independence was used to assess potential differences in the measures of interest by Board certification and other potential correlates, including teaching experience and teacher's level of education. The chi-squared test assessed whether there was an association between two categorical variables (e.g., Board certification and job satisfaction) by comparing a set of

observed counts in each of the crosstabulated cells with the expected counts in those cells (Ware, 1999). If the chi-squared value exceeded what would be expected by chance, then the null hypothesis of no relationship was rejected in favor of the alternative that there was a relationship between the two variables. Using the current example, rejecting the null hypothesis that Board certification and level of job satisfaction are independent would mean that Non-National Board teachers and National Board teachers differ in their reported level of job satisfaction. In this analysis, an alpha level of .05 was used to test for a statistically significant association. Given the exploratory nature of this research, an alpha level of .1 could be considered appropriate for the analyses reported here. In consideration of the number of tests being run as part of this analysis, the .05 alpha level was selected to protect against rejecting the null hypothesis in error.

Many of the measures of interest in this analysis were Likert scale items consisting of five points. For example, one scale commonly used in the survey ranges from 5=Contributes Significantly to 1=Does Not Contribute. The distribution across the five scale points was often highly skewed, so responses were collapsed across categories prior to testing for independence in order to maximize the power to detect differences, particularly given the limited sample size. Responses one, two and three were grouped together, indicating "not an important or significant need". Four and five were grouped together. This combined category could be described as a "significant or important need". Therefore someone rating salary increase a four was in the same group as someone rating it a five. This was also a

good approach to use for this type of survey, because respondents may vary on what they think a four or five is or what they think a one or two is.

Qualitative Methods

The qualitative analysis focused on an assessment of findings from the taped follow-up telephone interviews. Prior to being interviewed, participants were asked for their permission to be audiotaped. Notes from the researcher and transcribed notes from the audiotapes were used. Data analysis of the collected results from the telephone interviews included several steps. First, the qualitative data were organized. Categories were generated as the investigator searched for patterns or themes. Next, data were coded and both commonalities and differences between the two groups were reported (Marshall & Rossman, 1999). Ultimately, the qualitative results provided additional understanding and depth to supplement the quantitative analysis findings.

Summary of the Methodology

In sum, the use of both quantitative and qualitative methodologies is the major strength of this research design. Triangulation, the use of multiple data collection methods, data sources or theories as corroborative evidence for the validity of research findings, helps to eliminate biases that might result from relying exclusively on any one data collection method (Gall, et al., 1996). In this study, data are obtained from quantitative survey items, open-ended survey items, and qualitative telephone interviews.

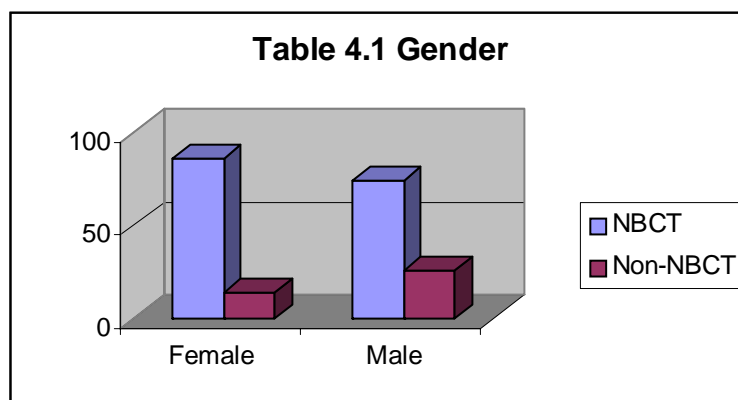
Drawing on the strength of an approach that taps the benefits of both quantitative and qualitative methodologies, the investigator expects to give an accurate picture of the wants and needs of high school mathematics teachers.

Chapter 4

Analysis of Data

Demographic Information

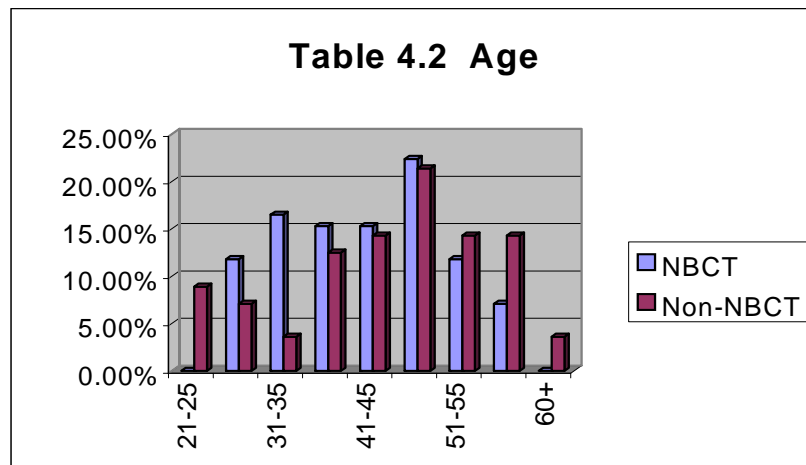
This section documents the distribution of survey respondents according to the study's major demographic variables. Separate figures for Board Certified and Non-Board Certified teachers are presented. Of the National Board Certified Teachers (NBCT) (n=85), 73 (86%) were female and 12 (14%) were male. Of the Non-National Board Certified Teachers (Non-NBCT) (n=61), 45 (73.8%) were female while 16 (26.2%) were male. In the state of North Carolina, 64.5% of secondary teachers are female while 35.5% are male. The Non-NBCTs gender make-up more closely resembles that of the state than does that of the NBCTs. Table 4.1 displays the count of surveyed NBCTs and Non-NBCTs by gender.



***One Non-NBCT respondent did not answer this question.*

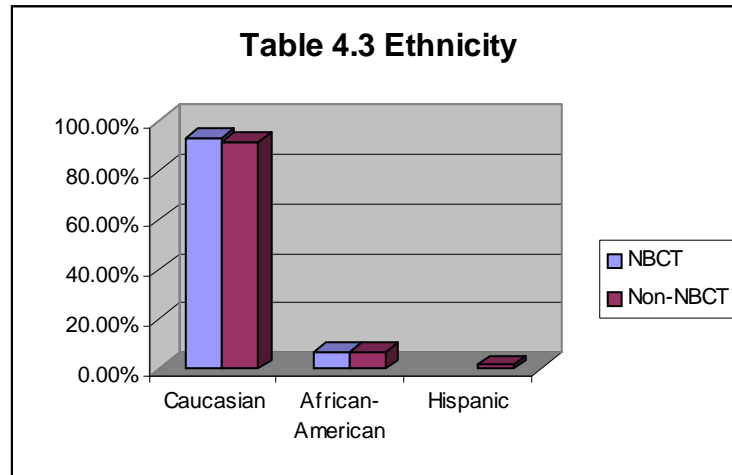
Teachers were also asked to report their age. Of the National Board Certified teachers, one left this question blank while six Non-National Board Certified teachers

did not respond. The mean age for NBCTs in the study was 42 years. The median was 43 years. Reported ages for NBCTs (n=85) ranged from a minimum of 26 to 59. The average age for Non-NBCT (n=56) was 45 years. The median was 48 years. Surveyed Non-NBCTs ranged in age from 23 to 65. The distribution of NBCTs and Non-NBCTs by 5-year age categories is shown in Table 4.2.



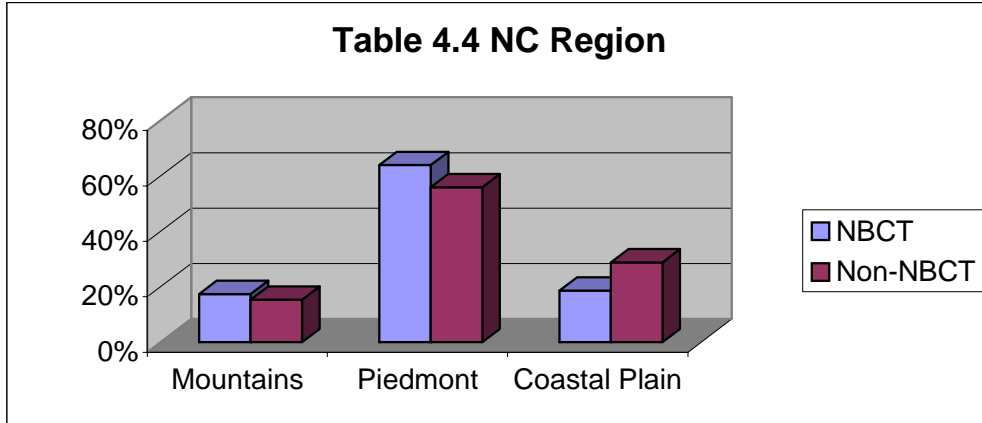
***Six Non-NBCTs respondents left this question blank.
 **One NBCT respondent left this question blank.
 **Percentages do not add to 100% due to rounding.*

Of the National Board Certified Teachers (n=85), 79 teachers (93%) were Caucasian and six teachers (7%) were African American. Of the Non National Board Certified Teachers (n=59), 54 teachers (91.5%) were Caucasian, four teachers (6.8%) were African American, and one teacher (1.7%) was Hispanic. Three respondents did not identify their ethnicity. In North Carolina high schools, 82.9% of teachers are Caucasian, 15.3% are African American, and 1.8% are some other ethnic origin. Table 4.3 displays the distribution of NBCTs and Non-NBCTs by ethnicity.



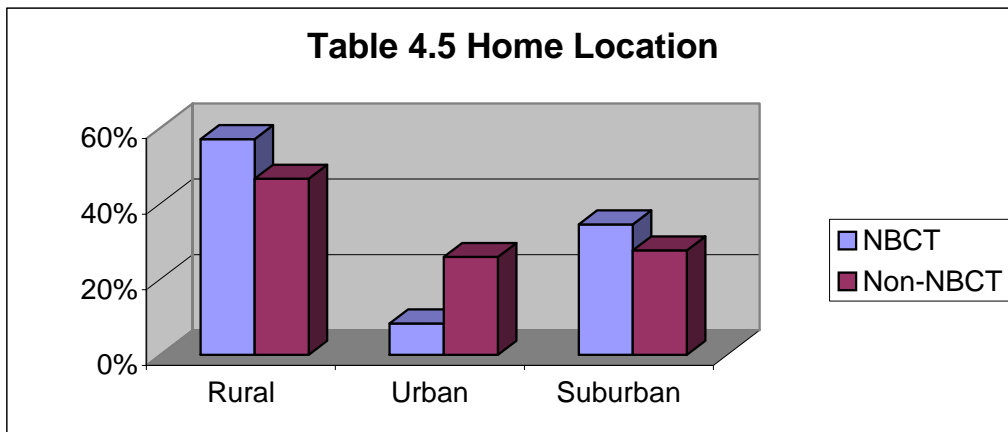
***Three Non-NBCT respondents left this question blank.*

A majority of the teachers who participated in this study were from the Piedmont. Since the sample was designed to mirror the geographic distribution of Board Certified teachers in North Carolina, this is not surprising. Many teachers are employed in the populous Piedmont region of North Carolina. 54 of the 85 Board Certified teachers (63.5%) teach in the Piedmont, 15 teachers (17.7%) teach in the Mountains, and 16 (18.8%) teach in the Coastal Plains. The geographic distribution of Non-National Board Certified teachers (n=59) was as follows. 33 teachers (55.9%) are from the Piedmont region, nine (15.3%) are from the Mountains, and 17 of the Non-NBCTs (28.8%) teach in the Coastal Plains region. Three Non-NBCT respondents did not identify the region of North Carolina in which they teach. Table 4.4 displays these findings.



***Three Non-NBCT respondents left this question blank.*

The teachers who participated in this study were asked to identify their home location as being rural, urban, or suburban. Forty-eight (57%) Board Certified teachers (n=84) reported that they live in rural locations, seven teachers (8%) live in urban locations, and 29 teachers (35%) live in suburban locations. Of the Non-National Board Certified teachers (n=58), 27 (46.6%) live in rural locations, 15 (25.9%) live in urban locations, and 16 (27.6%) live in suburban locations. Four Non-NBCT respondents left this question blank. The count of respondents by Board certification and home location can be seen in Table 4.5.

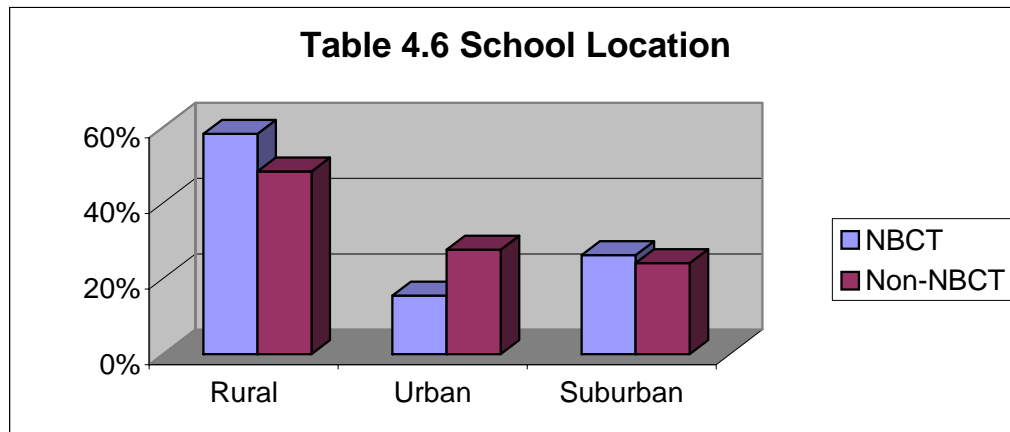


***Four Non-NBCT respondents left this question blank.*

***One NBCT respondent left this question blank.*

***Percentages do not add to 100% due to rounding.*

School location was also determined in this study by teacher self-report. Of the National Board Certified teachers (n=84), 49 (58.3%) taught at rural schools, 13 (15.5%) taught at urban schools, and 22 (26.2%) taught at suburban schools. Of the Non-National Board Certified teachers (n=58), 28 (48.3%) taught at rural schools, 16 (27.6%) taught at urban schools, and 14 (24.1%) taught at suburban schools. Four Non-National Board Certified teachers did not respond to this question. Table 4.6 documents self-reported school location for survey participants by Board certification group.

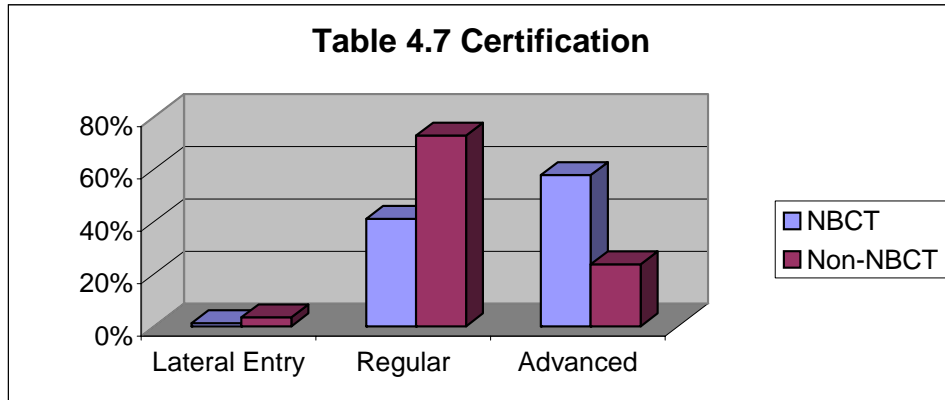


***Four Non-NBCT respondents left this question blank.*

***One NBCT respondent left this question blank.*

The distribution of NBCTs and Non-NBCTs by certification is detailed in Table 4.7. Among the 83 Nationally Board certified teachers who responded to the item, one (1.2%) teacher was lateral entry, 34 teachers (41%) had regular certification and 48 teachers (57.8%) reported advanced certification. In the group of Non-National Board Certified teachers (n=59), two teachers (3.4%) were lateral entry, 43 teachers (72.9%) had regular certification, and 14 teachers (23.7%) had advanced certification. Three Non-NBCTs did not identify their certification. Based on observations made when entering the data, there appeared to be some respondent

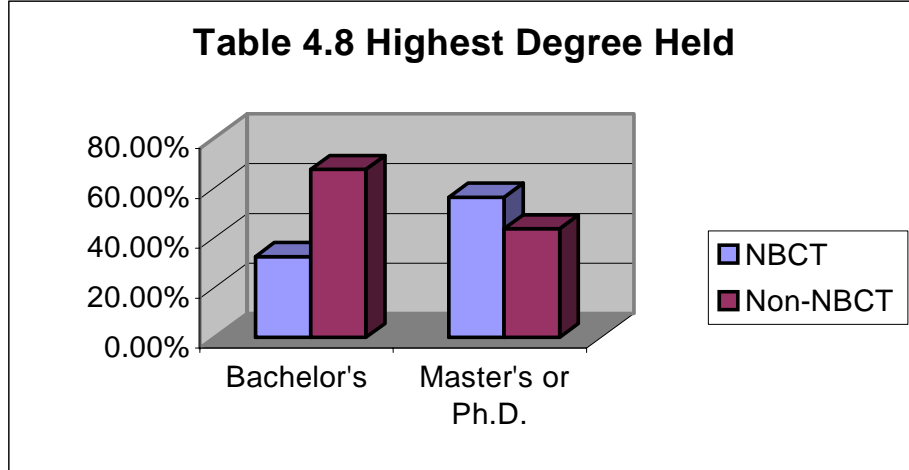
difficulties in providing data on urbanicity and certification. Therefore, caution should be used when attempting to generalize from results presented here.



***Three Non-NBCT respondents left this question blank.*
***Two NBCT respondents left this question blank.*

Teachers were asked to identify the academic degrees that they held. The data were entered to facilitate identification of the highest academic degree. 26 (33%) of 80 NBCTs who provided a codeable response held a Bachelor’s degree while 54 (68%) Board Certified teachers held a Master’s degree. Holding a Master's degree was less common among Non-NBCTs. Of the Non-NBCTs (n=55), 31 (56.4%) teachers held a Bachelor’s degree while only 24 (43.6%) teachers held a Master’s degree or Ph.D. (One teacher held a Ph.D.)

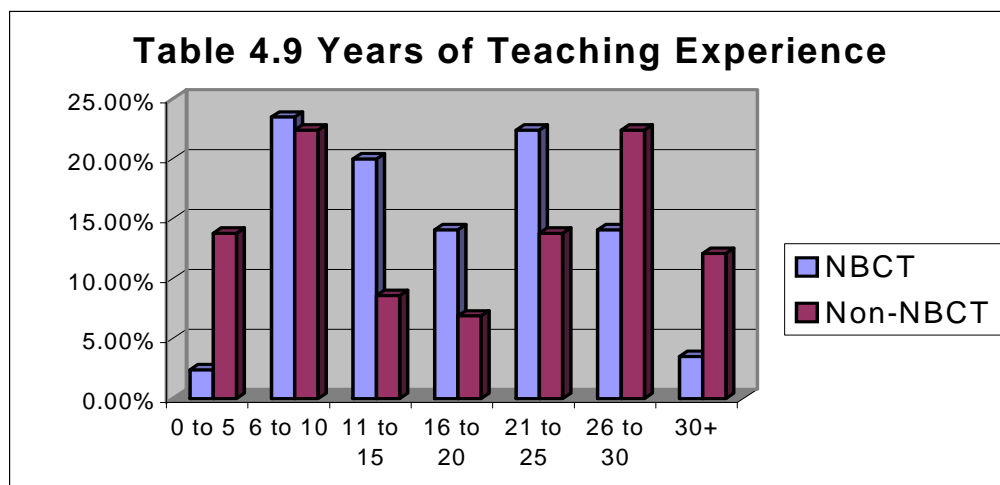
In North Carolina, less than 1% of teachers hold less than a Bachelor’s degree while 63.5% of teachers’ highest degree is a Bachelor’s degree. A Master’s degree is the highest degree held by 33.6% of teachers while a sixth year degree is the highest degree of 2.1% of teachers. Finally, 0.7% of teachers hold a doctorate. Table 4.8 displays information on the highest degree held by NBCTs and Non-NBCTs participating in this study.



***Seven Non-NBCT respondents left this question blank.*

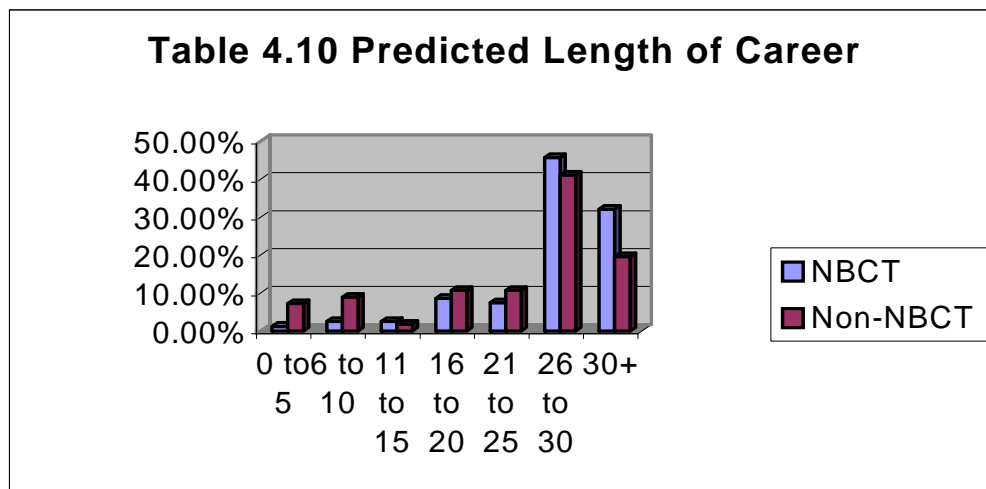
***Five NBCT respondents left this question blank.*

Teaching experience was another demographic measure that was captured at the end of the survey. NBCTs (n=85) averaged 18 years of experience while Non-NBCTs (n=59) averaged 18 years of experience. The range for NBCTs was 5-37 years of experience while the number of years of experience among NBCTs ranged from 1 to 35 years in the classroom. Non-NBCTs tended to be more concentrated at the early and late career years as compared to NBCTs who were more likely to be in the middle career years. Table 4.9 displays this information



***Three Non-NBCT respondents left this question blank.*

Teachers were asked to predict the length of their teaching career in years. The average predicted length of the career of the NBCT (n=78) was 29 years while that of the Non-NBCT (n=57) was 27 years. The reported values for predicted length of teaching career among NBCTs ranged from a minimum of 10 to a maximum of 45 years. Responses given by Non-NBCTs ranged from 7 to 38 years. The mode for both NBCT and Non-NBCT groups was 30 years. Table 4.10 displays these findings.



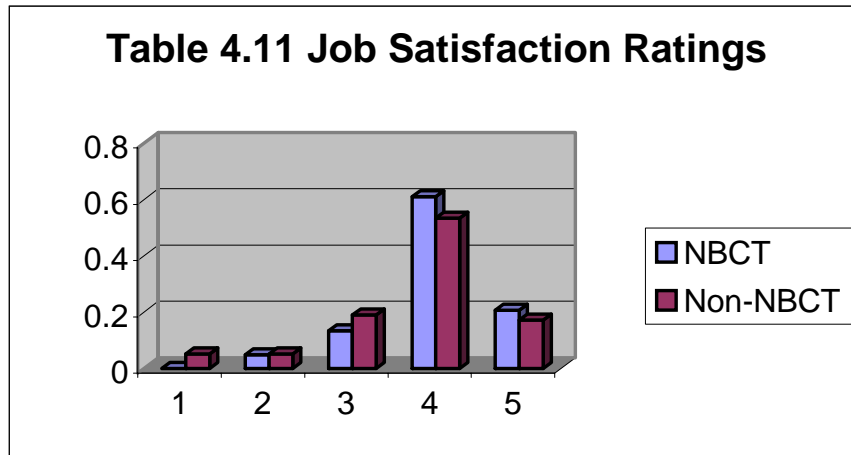
***Five Non-NBCT respondents left this question blank.*

***Seven NBCT respondents left this question blank.*

***Percentages do not add to 100% due to rounding*

In addition to gathering demographic information, the final section of the survey instrument also instructed teachers to rate the level of their job satisfaction with one being “Very Unsatisfied” and five being “Very Satisfied”. As seen in Table 4.11, of the NBCT, 15 (18%) rated their satisfaction a two or three, 50 (61%) teachers rated it a four, and 17 (20.7%) rated it a five. Among NBCTs, job satisfaction tended to be lower. Three (5.2%) teachers rated their satisfaction a one,

14 (24%) teachers rated it a two or three, 31 (53.4%) rated it a four, and ten teachers (17.2%) rated it a five. As discussed earlier, the difference in job satisfaction between NBCTs and Non-NBCTs in this study reached statistical significance.



***Four Non-NBCT respondents left this question blank.*
***Four NBCT respondents left this question blank.*

The National Board Certified teachers in this study have received many honors. Thirty-seven (43%) of these teachers indicated that they have been the Teacher of the Year for their schools. Eleven (12.8%) of the NBCTs have been selected as the Teacher of the year for their districts. One of these teachers reported that he/she was North Carolina’s Teacher of the Year. Seven (8%) of these teachers have been North Carolina Teaching Fellows. These teachers have won many other honors. These honors include: Tandy Technology Award, Time Warner Award, Star Teacher, NFL Teacher of the Year, Fulbright Scholar, Razor Walker Award, Golden Apple Award, Radio Shack Award, and Paul Douglas Teaching Scholarship. Table 4.12a lists these honors.

Table 4.12a Teaching Honors of NBCT
School Teacher of the Year
District Teacher of the Year
North Carolina Teaching Fellows
Star Teacher
Time Warner Teaching Award
Tandy Technology Award
NFL Teacher of the Year
Fulbright Scholar
Razor Walker Award
Governor's Business Award
Golden Apple Award
State Teacher of the Year
Paul Douglas Teaching Scholarship
Radio Shack Award

The Non-National Board Certified teachers have also received awards. Fifteen (24.2%) of these teachers have been selected Teacher of the Year for their schools. One (1.6%) teacher has been selected as the Teacher of the Year for his/her district. Other honors include: Terry Sanford Award, Outstanding Young Educator Award, Who's Who, Star Teacher, and North Carolina Teaching Fellow. Table 4.12b lists these honors.

Table 4.12b Teaching Honors of Non-NBCT
School Teacher of the Year
District Teacher of the Year
Terry Sanford Award
Outstanding Young Educator
Who's Who
NCCAT Alumni Advisory Committee
Star Teacher
North Carolina Teaching Fellows

In this study, NBCTs were more likely to report an honor than Non-NBCTs. 51 (60%) of the 85 surveyed NBCTs checked at least one honor while only 19 (31%)

of the 62 Non-NBCTs indicated that they had received at least one of the listed honors.

Analysis

The following sections report the findings from the study. The investigator searched for the answers to the research questions initially formulated. As stated in Chapter 1, the research questions are as follows:

1. Administrative Support:

- a. What are the most important administrative support needs of high school mathematics teachers?
- b. To what degree are administrative support needs related to the personal or professional characteristics of high school mathematics teachers?
- c. Are there differences in administrative support needs of National Board Certified teachers and Non-National Board Certified high school mathematics teachers?

2. Professional Development:

- a. What are the most important professional development needs of high school mathematics teachers?
- b. To what degree are professional development needs related to the personal or professional characteristics of high school mathematics teachers?
- c. Are there differences in the professional development needs of National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers?

3. Professional and Personal Characteristics:

- a. What are the common professional characteristics of high school math teachers? What are the common personal characteristics of high school mathematics teachers?
 - b. Are there differences in the perceived personal and professional characteristics of National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers?
4. Are there differences in where National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers place themselves on the career cycle?
 5. Is there a difference between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers on job satisfaction?

Administrative Support Needs

As seen in Table 4.13, the following administrative needs were almost uniformly identified as important (rated a four or five) by surveyed high school mathematics teachers:

- Adequate materials and supplies
- Increased salary
- Smaller class size
- Safe environment for teaching and learning
- More administrative support with discipline
- More quality time in the classroom

Each of these items was rated a four or five by at least 80% of teachers who responded to the item. The percent of teachers reporting a four or five for each administrative support need can be seen in Table 4.13. The item receiving the most support was safe environment for teaching and learning. Of all teachers (n=141)

answering the item 93% felt that a safe environment was important. Adequate materials and supplies also consistently received a high rating with 91% of teachers (n=139) rating it a four or five. More quality time in the classroom was rated a four or five by 87% of teachers (n=126). However, 14% of responses for this item were missing, so it is important to be cautious in making generalizations based on these results. Over 80% of teachers (n=141) rated smaller class size as an important need. Also rating high among a substantial majority of respondents were less interruptions (n=139), increased salary (n=141), and more administrative support with discipline (n=140) with 83%, 82%, and 80% of teachers respectively citing the need as an important one. The importance of administrative support was reiterated in the telephone interviews, where one respondent urged: "Support teachers with their disciplinary decisions. "The majority of teachers did not feel that a telephone in the classroom (n=139), an office (n=139), or more teaching assistants (n=138) contributed significantly to their administrative support needs. These items received less than 50% of responses in the combined four and five group.

Teachers were also given the opportunity in this section of the instrument to identify areas other than those mentioned where more administrative support or additional student information might be valuable. Responses for areas where additional administrative support was needed tended to focus on assistance with non-classroom related activities and duties (e.g., paperwork, clubs, extra duties) and support with other teaching staff (e.g., new teachers, substitutes). Information regarding students' home environment and academic background, including information on any conditions or disabilities that might affect learning in the

classroom, were the two most common types of student information that teachers identified as important.

On the survey, there were three items addressing community support. Each of these items was thought to be important by 9 out of 10 teachers who provided a response. These items were respect as a professional (n=142), students who come to school well rested and fed (n=142), and parental support for teacher activities/decisions (n=142). These data provide important empirical evidence of the importance of community support to high school mathematics teachers.

As explained in Chapter 3, it was hypothesized that National Board Certified teachers and Non-National Board Certified teachers would have different support and development needs. In testing for these potential differences, the null hypothesis is stated as follows: There is no difference between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers on the need or characteristic of interest (e.g., recognition for accomplishments, time to pursue study and research independently).

The first administrative support need that was examined for a possible relationship with Board certification was the need for recognition. A Chi-Squared test was administered to determine whether there was a difference between NBCTs and Non-NBCTs on the need for recognition for accomplishments. It was hypothesized that NBCTs would rate this item higher than Non-NBCTs. NBCTs may feel that they need more recognition for their accomplishments than Non-NBCTs which may have been a factor in why they chose to seek Board certification. In this study, the percentage of NBCTs rating recognition for accomplishments a four or five

was 73% while the figure among Non-NBCTs was 58%, a 15 percentage point difference. This difference is marginally significant ($X^2=3.73$, $p=0.05$). The assertion that NBCTs and Non-NBCTs differ on the need for recognition is marginally supported.

The next administrative need that was analyzed for a possible relationship with Board certification was control over schedule. Do NBCTs and Non-NBCTs differ on whether they want more control over their schedule? It was thought that there would be a difference and that NBCTs would want more control. A Chi-Squared test revealed no statistically significant difference between the groups at the .05 level. The percentage of NBCTs rating more control over schedule a four or five was 62% while the corresponding figure among Non-NBCTs was 76%. This difference approaches statistical significance but fall short at the .05 alpha level ($X^2=3.13$, $p=0.08$). It should be noted that among those surveyed in this study, Non-NBCTs wanted more control over their schedule than NBCTs. This is the opposite of what was thought to be true.

The third need that was considered for a bivariate association with an explanatory variable of interest was the need for information about the criminal and violent records of students. It was asserted that teachers in suburban or urban schools may want this information more than teachers in rural schools since crime and violence may be a greater concern in suburban and urban areas. However, a Chi-Squared test ($X^2=0.99$, $p=0.32$) revealed that there was no significant difference between these two groups on their reported need for information about student criminal and violent records

While the quantitative results clearly point to a number of important administrative needs, comments from the individual telephone interviews paint a richer picture of the types of administrative support teachers need to do their best teaching. There is clearly a desire for administrators to be more visible in the classroom and more open to interaction with teachers, as illustrated by the following comments:

- “Get in the classroom.”
- “Recognize excellence and foster it.”
- “Get back in the classroom and see how things are.”
- “Come in my classroom and see what I actually do.”
- “Be visible.
- ”Be more open to suggestions from the teachers.”
- “Listen to teachers. Talk to teachers.”

Professional Development Needs

Surveyed teachers shared a number of common professional development needs. Table 4.14 displays the percent of teachers who reported a rating of four or five for each professional development need. The five needs that were most commonly rated as important (four or five) are listed below. .

- Direct experiences as a teacher
- Teacher control of topics, needs, and time
- Teacher control of professional development
- Technology training
- Professional conferences/workshops

Each of these items was rated as an important need by at least 70% of teachers who responded to the question. The item receiving the most fours and fives was direct experiences as a teacher. Of all responding teachers (n=142) 87% felt that direct experience as a teacher was important. Teacher control of topics, needs, and time also was often given a high rating with 81% of all teachers (n=143) rating it a four or five. Teacher control of professional development was viewed as an important need by 79% of all teachers (n=143). A similar figure, more than three-quarters of responding teachers (n=143), reported that technology training and professional conferences/workshops each were important needs.

The majority of teachers did not feel they needed the following professional development opportunities: travel opportunities (n=143) , time management training (n=142), time to study and pursue research independently (n=143), consultations with specialists (n=143), undergraduate courses in field of specialization (n=140), professional journals (n=143), writing for publication (n=142), being a professional development leader (n=143), and being a team leader or department chair (n=142). These items received less than 50% of responses in the combined four and five category. Particularly noteworthy is the lack of support for writing for publication as an important professional development need. Only 5% of respondents (n=142) rated writing for publication as an important need.

As with administrative support needs, possible differences in professional development needs between groups were investigated as part of this analysis. In doing this, the following null hypothesis is tested: There is no difference between NBCT high school mathematics teachers and Non-NBCT high school mathematics

teachers on the professional development need of interest . A Chi-Squared test was conducted to determine whether there was a difference between NBCTs and Non-NBCTs on needing the latest evaluation/assessment techniques. It was hypothesized that NBCTs would be more likely to believe it is important to keep up with the latest evaluation/assessment techniques. However, the Chi-Squared test ($X^2=0.1370$, $p=0.7113$) revealed no significant difference between NBCTs and Non-NBCTs on their perceived need for this information on the latest evaluation/assessment techniques

A second test was run to determine whether there was a difference between NBCTs and Non-NBCTs on their reported need for a one semester sabbatical upon completion of ten years of successful teaching. Again, the researcher thought that the NBCTs would feel a greater need for this than the Non-NBCTs. Of the NBCTs, 57% felt that this was an important need while 43% of the Non-NBCTs rated the sabbatical opportunity a four or five (important need). This is a difference of 13.69 percentage points between the two groups. However, the Chi-Squared value ($X^2=2.5337$, $p=0.1114$) did not reach statistical significance.

A third analysis of interest was a potential difference between NBCTs and Non-NBCTs on needing time to pursue study and research independently. It was thought that NBCTs who had spent a considerable amount of time pursuing Board certification independently might feel they need this more than the Non-NBCTs. However, the Chi-Squared test ($X^2=0.2710$, $p=0.6026$) revealed no significant

difference between NBCTs and Non-NBCTs on their perceived need for time for independent study and research.

A hypothesized difference between NBCTs and Non-NBCTs on needing professional journals was also assessed using a chi-squared test of independence. Again no statistically significant difference between NBCTs and Non-NBCTs was found ($X^2=0.9085$, $p=0.3405$). In sum, there was no evidence that NBCTs and Non-NBCTs' needs differed for any of the following professional development opportunities: information on latest evaluation/assessment techniques, one semester sabbatical opportunity, time to study and pursue research independently, and review of professional journals.

On the other hand, there was a clear difference between the groups on their expressed need to be a professional development leader. Of the NBCTs, 50% felt that this was an important need while the figure among Non-NBCTs was only 29%. This is a statistically significant difference of 21 percentage points between the two groups ($X^2=6.42$, $p=0.01$) As hypothesized, NBCTs who took a significant step to enhance their own professional development by attaining Board certification were more likely to rate being a professional development leader as an important need as compared to their Non-NBCT colleagues.

The researcher also wanted to explore possible significant differences between other groups. It was hypothesized that teachers' level of education would be associated with how important it was to have time to pursue study and research

independently. Teachers who have completed a Master's or PhD may want more time to pursue additional coursework or degrees as compared to their counterparts with a Bachelor's degree. Clearly, this assertion was not supported by the data reported here ($\chi^2=0.10$, $p=0.76$). Similarly there was no difference between teachers with a Master's or PhD and teachers holding a Bachelor's on their reported need for reviewing professional journals ($\chi^2=0.0321$, $p=0.8579$).

Another variable that was thought to be an important explanatory variable was years of teaching experience. Less experienced teachers, who were defined as having one to 12 years of experience, may want time to observe mentor teachers while this may not be an important need among a group of more experienced teachers. The posited relationship did not appear to hold in this study ($\chi^2=0.0576$, $p=0.8103$). The second item tested for a potential association with years of teaching experience was the need to have time to pursue study and research independently. Again, the Chi-Square test ($\chi^2=0.0941$, $p=0.7590$) revealed no significant difference between less experienced and more experienced teachers on this item.

The following comments given during individual telephone interviews help underscore a couple of the important findings from the quantitative analysis of professional development needs. Opportunities to attend conferences and workshops and technology training are clearly important professional development needs for high school mathematics teachers in North Carolina. Both of these needs were commonly reported as important professional development needs in the self-administered survey. and both appear in comments from the follow-up telephone interviews which are included below.

- “Math conferences. Going to other schools to see what they were doing in the classroom.”
- “A lot of training on how to teach integrated math, problem solving. And of course, the graphing calculator.”
- “A lot of technology workshops. AP workshops. DPI (Department of Public Instruction) testing development.”
- “Just recently we received a new math specialist. The last workshop she did was the best. We had input on what was important to us!”
- “AP (Advanced Placement) workshops help me stay up to date on the grading of the tests”.
- “Peer coaching project. It makes us more accountable for our own progress and our own development. We support each other. Our development is self-driven as opposed to administration-driven. We have a different focus for our growth plan.”
- “Going back to college on my own.”
- “I have gotten my Master’s degree.”
-
-
-
-
- “National Board Certification was real valuable.”
-

Professional Characteristics

Many teachers identified with each of a number of professional characteristics of interest in this study. At least four out of five teachers reported a four or five (describes accurately) for each of the following characteristics.

- Committed to ongoing personal growth and development
- Committed to ongoing professional growth and development
- Have a personal spiritual relationship that is based on faith
- Self-reflective
- Passionate and enthusiastic about my work
- Task oriented about my work
- Work long hours
- Feel productive

As is evident from Table 4.14, surveyed teachers were almost unanimous in describing themselves as "Committed to ongoing personal growth and development" and "Committed to ongoing professional growth and development". The vast majority of teachers also characterized themselves as passionate and enthusiastic about work (90%, n=144) and self-reflective (90%, n=144). Working long hours (n=144), feeling productive (n=143), and being task oriented about my work (n=143) were rated a four or five by 81.25%, 81.12%, and 88.81% of teachers, respectively. On the other hand, less than 30% of teachers identified with the following characterizations of their personal or professional life: tend not to take risks (n=144), have a low threshold for stress (n=141), and tend to avoid stressful situations (n=143). In assessing these results, it is important to consider the potential for social desirability bias. Most teachers want to present themselves in a socially acceptable way. For example, most people think teachers should be committed to ongoing professional growth and development, therefore, teachers may have been more likely to rate this characteristic and other positive characteristics highly.

The researcher then investigated whether identification with particular professional characteristics might vary across groups. The null hypothesis is that there is no difference between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers on the professional characteristic of interest (e.g., risk-taking, integration of work into all aspects of life). A Chi-Squared test was used to test for a statistically significant difference between NBCTs and Non-NBCTs on tending not to take risks. It was thought that NBCTs might feel they take more risks than Non-NBCTs. One might argue that attempting to meet the requirements for Board Certification is a risk. However, there was no support for this hypothesis, as the chi-squared test revealed no significant difference between NBCTs and Non-NBCTs ($\chi^2=0.4561$, $p=0.4994$). .

Next, a proposed relationship between Board Certification and whether work is integrated into all aspects of the respondent's life was examined.. It was hypothesized that NBCTs may be more likely to identify with this idea of integrating work into all aspects of life than Non-NBCTs. Examining results from this study reveals a statistically significant difference ($\chi^2=8.4378$, $p=0.004$) between NBCTs and Non-NBCTs on whether work is integrated into all aspects of the teacher's life. The reader should also note that the difference was in the hypothesized direction.

[TERESA: I'D MOVE THESE NEXT TWO PARAGRAPHS TO THE NEXT SECTION. THEY ARE ABOUT PERSONALITY CHARACTERISTICS NOT PROFESSIONAL CHARACTERISTICS.] Do NBCTs and Non-NBCTs differ on whether they characterize themselves as creative? The researcher posited a difference with creativity being a more common trait among NBCTs. . Based on the

data from this study, the Chi-Squared test ($X^2=0.0020$, $p=0.9647$) revealed no significant difference between the two groups of teachers on this item.

Does the percent of "high energy" personalities reported vary by Board Certification group (NBCT, Non-NBCT)? In this study, the hypothesized relationship does not appear to hold. There was no significant difference between NBCTs and Non-NBCTs. ($X^2=1.4853$, $p=0.2229$)

While it is clear from the quantitative results that many teachers consider themselves highly committed and passionate about their job, the following comments given during individual telephone interviews convey some of the depth of this commitment and devotion. .

- "Excitement of mathematics. Excitement of the subject I teach."
- "The fact that I'm willing to look at different avenues, different approaches to learning, different methods, and keeping up with the standards."
- "Desire to be successful at it (job). I give it too much time and effort."
- "Consistency. I have a reputation of being mean. Some classes I say that and they laugh. Number one, everyone has a different personality. I say what the rules are, give a lot, I realize there are times when you have to, but at the same time, I'm fair. That is important. That's why I have a hard time with one of the first questions you asked about the administration. I try to be consistent. Don't ask me to let Johnny do something and Sally can't. I don't believe that's right . . ."
- "I know my curriculum."

- “Willingness to work with other teachers.”
- “Talent for motivating students to do the best they can.”
- “Willingness to accept a challenge, not back down, not give up.”

Personal Characteristics

As might be expected, there were a number of positive personality characteristics that accurately described 80% or more of surveyed teachers.

"Accurately described" was defined as a self-reported rating of four or five. For each of the personality characteristics listed in this section, Table 4.15 shows the percent of teachers rating the characteristic a four or five. The six characteristics that appeared most often across teachers were:

- Caring
- Cooperative
- Focused
- Sense of humor
- Independent
- Resourceful
- Resilient

Almost all of the respondents characterized themselves as caring. 9 out of 10 teachers (n=143) felt that being cooperative was part of their personality. The figure was similar when teachers were asked if "focused" (91%, n=141) or "sense of humor" (90%, n=143) described them accurately. A significant majority of teachers (85%, n=142) characterized themselves as independent. Being resourceful (n=131) and being resilient (n=131) were rated a four or five by 83.97% and 81.68% of responding teachers, respectively. On the opposite side of the spectrum, it was far less common for teachers to describe themselves as shy, low-key, reserved,

compulsive, or resigned. Less than 40% of teachers who answered the item identified with each of these characteristics.

However, it is important to note that some of these results could be very different if this study were replicated. There were two major difficulties in obtaining accurate data in this part of the instrument. First, prior to this section, all Likert scale items in the survey were presented in one column format. In this section, half of the items were listed in a second column. Given how a reader typically navigates a page vertically from top to bottom, the second column was likely not seen or processed by some respondents and was thus left blank. It could be argued that respondents who left these questions blank may have particular characteristics that distinguish them from the respondents who did answer the questions. Therefore, responses for items with high rates of missing data may not accurately represent all teachers who responded to the survey. The following characteristics had a higher frequency missing than did the other questions on the survey: compulsive, resourceful, reserved, self-actualized, low-key, resilient, serious, shy, organized, initiating, and caring. Fifteen or more respondents left these characteristic ratings blank. A second limitation in this section and other sections of the survey instrument was respondent difficulty with the comprehension of particular terms. It was clear that items like "self-actualized" and "integrated lifestyle" were sometimes left blank or perhaps answered inaccurately because respondents did not understand what the researcher meant.

TERESA: I THINK YOU WANT TO MOVE THE RESULTS FOR CREATIVE AND HIGH ENERGY HERE. Qualitative data from the follow-up telephone interviews

again lend support to the quantitative findings. The importance of caring and a sense of humor, both traits that teachers commonly identified with in the self-administered survey, came across in the telephone interview comments documented below.

- “I am understanding and caring.”
- “Flexibility. Creativity. Caring. I care about my kids.”
- “Humor, getting along with others. An even disposition.”
- “I think sense of humor first and foremost. I think without it, you’re not going to make it.”
- Flexibility. Sense of humor.”
- “Patience, probably number one. Trying to understand why they (students) do what they do.”
- “

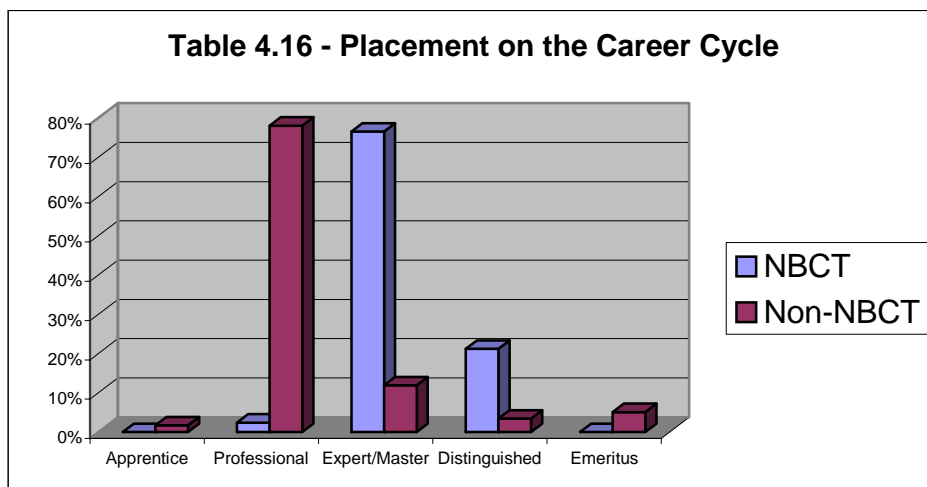
Job Satisfaction

Teachers were asked to rate their level of job satisfaction with one denoting “very unsatisfied” and five denoting “very satisfied”. Of all teachers (n=142) responding to the item, three (2.11%) teachers rated their satisfaction a one, seven (4.93%) teachers rated their satisfaction a two (TERESA: I'D COMBINE UP THE 1 AND 2 RESPONSES, JUST TO MAKE IT EASIER TO DIGEST.), 24 (16.9%) teachers rated their satisfaction a three, 81 (57.04%) teachers rated their satisfaction a four, and 27 (19.01%) teachers rated their satisfaction a five. These data were examined further to determine whether there was a significant level of difference in job satisfaction between NBCTs and Non-NBCTs. It was hypothesized that NBCTs

were more satisfied with their jobs than Non-NBCTs because teachers who were dissatisfied with the profession would probably not choose to pursue Board Certification. The data from this study tend to support this view. 82% of NBCTs reporting their level of job satisfaction (n=83) were very satisfied with their job (four or five rating) while the figure among Non-NBCTs was 14 percentage points lower (68%, n=59). This difference is nearly statistically significant at the .05 level ($X^2=3.78$, $p=0.05$).

Career Cycle

The survey questionnaire asked respondents to identify their current phase in the career cycle. Table 4.16 shows the distribution of teachers by reported stage of the career cycle and Board certification. As is evident from Table 4.16, NBCTs most often identified with the "expert/master teacher" category, while non-NBCTs most frequently classified themselves as "professional teachers". Of the 85 NBCTs, two (2.4%) identified themselves as professional teachers, 65 (76.5%) identified themselves as expert/master teachers, and 18 (21.2%) identified themselves as distinguished teachers. Among the 59 Non-NBCTs responding to the item, there was a wider range of responses. 1 (1.7%) teacher identified him/herself as an



apprentice teacher, 46 (78%) teachers identified themselves as professional teachers, seven (11.9%) identified themselves as expert/master teachers, two (3.4%) identified themselves as distinguished teachers and three (5.1%) teachers identified themselves as emeritus teachers.

***Three Non-NBCT respondents left this question blank*

Qualitative Results

The survey responses (open-ended) and telephone interviews underscored many of the findings from the quantitative analysis and revealed additional insights about teachers' perceptions of what they need to be successful and satisfied in the classroom. When asked for the three most important professional needs, many different responses were given. However, certain needs were cited consistently across a number of teachers. Table 4.17 lists the most important professional needs of National Board Certified teachers. As might be expected given the proximity of the questions on the survey instrument, these responses address several of the same needs that were rated as important in the first two sections of the survey questionnaire.

Professional Need	Number of Teachers Who Have This Need	Percentage of Teachers Who Have This Need (TERESA: AS WE DISCUSSED, I WOULD DELETE THIS COLUMN)
More Time	37	43%
Administrative Support	28	32.6%
Supplies/Materials	23	26.4%
Staff Development	21	24.4%
Increase in Salary	20	23.3%
Smaller Classes	18	20.9%

Many other professional needs were also mentioned by a more limited subset of respondents. Nine teachers mentioned a great need for more technology in the classroom or more updated technology. Many had graphing calculators, a form of technology used in the mathematics classroom, which were virtually obsolete. Nine teachers said that they would like to be respected as professionals. This included respect from students, administrators, parents, and the community. Eight teachers would like to have a greater voice in the structure of their schools. TERESA: THIS MAY BE OVERKILL. PERHAPS GROUP THESE. Other needs receiving six or fewer mentions included the following: greater parental support, opportunities for peer collaboration, recognition for performance, and increased community involvement in schools.

The telephone interviews revealed a variety of viewpoints about what teachers need to be satisfied and successful in their job. Teachers discussed many different needs and the importance of them to their success and satisfaction in the classroom. Echoing the findings from the self-administered survey data, support, time, money and materials were common themes that appeared in the data gathered in the follow-up telephone interviews.

- "A lot of it (*time*) is actually spent afterschool. Instead of either helping kids or developing your plans, you have to go to meetings. We're overworked. And a lot of that is just ridiculous."
- "I need workdays where you can actually work and not be told you have to go to something that is totally worthless. I think they started doing that because so many people started taking the day off. But we take days off

because you burnt us out. It's kind of a vicious cycle. Teachers need *time* to do what they feel is important for their students."

- "I want the administration to come in my room and see what I actually do. Which goes back to the question about the administration's *support*. If they came into our rooms they could really support us with the parents. The parents complain all the time. At our school, things I want I usually get. The support I think is not there is the actual hands-on. Come and see what we're doing."
- "I think teachers feel like they're not looked upon as professionals. We're always being questioned. Why did you do that? It's like I can't make a decision. But at the same time they're not watching me to see why I'm doing what I do. I think it's a total lack of *support* from the administration."
- "The whole process (National Board Certification) was very frustrating for me. I did not get any *support* from my administrators, which was very disappointing for me. They did not even acknowledge that I was going through the certification process. They didn't support me in my efforts."
- "I think the *salary* deal is not that you can make a lot of money but that you're valued for what you do. If what we are doing is important, then we should get paid for what we are doing. Money for the time we put in everyday."
- "I think it is absolutely ridiculous that we did not get a *pay raise* and I'm in it because I feel it's important and because I care about the students but it's a slap in the face to be paid what I'm paid with a Master's degree. It's

ridiculous. That's what they need to do is pay teachers what they're worth. I came from the professional world and I know what professionals are paid and it's ridiculous what teachers are paid. What could be more important than teaching children?"

- “We need *materials* to work with. One of the big things that hampers teachers across the state is having things to work with. Some school systems even have restrictions on copying.”

In assessing the open-ended responses from Non-National Board Certified teachers, Non-NBCTs identified a number of important professional needs, including a number that were identical or similar to those expressed by Board Certified teachers. Table 4.18 lists these needs.

Professional Need	Number of Teachers Who Have This Need
Administrative Support	21
Supplies/Materials	17
Staff Development	16
Time	11
Parental Support	10
Smaller Classes	9
Salary	8
Technology	7

These teachers mentioned many other things that they felt were important professional needs. (TERESA: I'D STAY AWAY FROM ANYTHING THAT WAS MENTIONED BY ONLY ONE PERSON. AS I WAS SAYING EARLIER WITH THE "OTHER, SPECIFY" RESPONSES, I JUST THINK IT'S SAFER NOT TO USE A UNIQUE RESPONSE IN YOUR WRITE-UP.) Learning the latest curriculum innovations was mentioned by two Non-NBCTs. Five Non-NBCTs thought that

gaining respect was very important. Five Non-NBCTs felt that eliminating End-of-Course testing was important. Three Non-NBCT wanted more support from their co-workers. In a somewhat related vein, a better atmosphere at school was mentioned by four Non-NBCT. Six teachers wanted to have a voice in school-based decisions. The following comments from individual telephone interviews reinforce the findings of the survey. Again, support, money and materials are often the focus of teacher responses.

- "Probably, with Central Office employees and DPI (Department of Public Instruction), I think they need to see really what it's like again, because they've been out of touch. I think I would be more satisfied knowing that they really see what we go through, that they really know. Because they've forgotten or some of them have never been classroom teachers. And it's hard for them to make decisions for us based on the fact that they really don't know what's going on in the classroom. That would give me a satisfaction knowing that they were trying to get back in touch with what's going on in the classroom. That they're trying to lend *support* to teachers."
- "*Support* from the administration is needed. Mainly with discipline."
- "Figure out how to give everybody a *calculator* when we give them (the students) a book. In the math classroom, I have been saying that to everybody I can. Find some money to give the kids a calculator."
-

- “More money, yeah more money to get any *supplies* that you need. I like to use technology in the classroom, but it's almost impossible to get the things I need.”
- “The administration should *support* us (teachers) getting out of the classroom to go somewhere else to help our enlightenment. Like observing teachers at other schools.”
- “Workshops to help with the changing things, like right now integrated math is very popular. Helping with strategies, new ideas, someone showing you things so you don't have to invent them. I would like to have some chance to learn to use the technology that is available in math.”
- “We need *monetary gains*.”
- “We don't all have access to the graphing *calculators*. I think that's the biggest challenge we have in math. We don't have the luxury to issue students calculators to take home. The End of Course test is geared toward technology. We fight the battle. We have a classroom set and they disappear. You can't blame the kids for taking them home, because they feel that pressure, too. No other curriculum has to use them. It's a lot of pressure.”

The next open-ended question on the survey asked the teachers to list the three most important changes needed for them to do their best teaching. There were a variety of answers given. The items mentioned most frequently by National Board Certified teachers are presented in Table 4.19.

Table 4.19 Changes Needed for NBCT		
Changes Needed	Number of Teachers	Percentage of Teachers

More Time	28	
Smaller Classes	18	
Parental Support	16	
Administrative Support	16	
Less Testing	14	
Salary	12	

These teachers proposed many other changes. It was felt that staff development needed to be changed. Ten teachers mentioned this. These teachers wanted staff development that was meaningful to them and their particular situations. Six teachers said that they needed more updated technology. They did not feel they were adequately preparing their students with out-of-date technology, particularly graphing calculators. Six teachers mentioned having adequate supplies. Five teachers wanted to be able to voice their opinions on school and student matters. Other desired changes mentioned were having trained teachers in the classroom, updating building for technology, a safe school climate, collegiality, respect as a professional, less paperwork, and recognition for a job well done. (TERESA - IF THESE WERE ONLY MENTIONED BY ONE OR TWO PEOPLE I'D EXCLUDE FOR CONFIDENTIALITY PURPOSES.)

In the individual telephone interviews, National Board Certified teachers were asked what changes could be made to keep them from burning out in the classroom. There were a number of interesting responses. Excerpts from several of the responses follow.

- “There are absolutely so many demands that the state dept is throwing out. They are random acts of, just random acts. They’re like, oh this is what we want you to do. Oh, no this is what we want you to do. Wait well let’s tack on

these 15 responsibilities. I cannot believe if these people are educators they are far removed from the classroom. And all the demands and all this stuff, it's killer. I feel worst for the ILTs (Initially Licensed Teachers). You go to college for 4 years and you come out and what you did in college, it doesn't really count. Excuse me you know. The state dept will develop a process and run it 1 or 2 years and pitch it out and come up with the next better or best thing. I just can't believe they're efficient at all. Well hell they can't be, they're a big bureaucracy. I think the biggest change that needs to be made is to take some of this busy work away from teachers. Stop stressing us out."

- "Cut down on red tape. Quit focusing so much on testing."
- "Pay them (teachers). Treat them as professionals. It was amazing to me that teachers, I think, have the most power and influence over kids yet, they're not involved in the decision-making processes, at any level. Maybe with the SIT team, but at our school that doesn't mean anything. It's like, yeah, I hear you, but I'm not really listening."
- "I think we (teachers) need fewer things sent down from the state level. We're getting to the point where we all feel like little clones in the classroom. We lose our spontaneity because we're so test-driven, pacing guide driven, and we do a disservice to a certain population. Kids could learn more or less without the pressure of the test."
- "Parents need to be more interested in what kids are learning and whether or not they show up for school. But even with upper level kids, sometimes the

parents are just interested in the grades they make not what they are learning.”

- “Teachers definitely need to be treated like professionals.”
- “Administrators need to support teachers in discipline. They need to be visible. If they are always in meetings, it doesn’t help much. They need to be in the halls and in the classrooms.”

Non-National Board teachers also pointed to several types of changes that they would like to see made to make them more successful and satisfied in the classroom. Non-NBCTs and NBCTs both proposed some similar changes. Table 4.20 lists the most frequent responses given by NBCTs.

Changes Needed	Number of Teachers	Percentage of Teachers
Smaller Classes	16	
Time	15	
Less Testing	13	
Administrative Support	13	
Supplies/Materials	12	
Staff Development	10	

Other suggested changes included more parental support and updated technology, each of which was mentioned by seven teachers. Three teachers wanted less paperwork. Community support and an increase in salary were each cited by three teachers. Less common responses included the following: giving teachers a voice in school-based decisions, fewer interruptions in the classroom. , need for improvement in student skills before advancement to the next level of mathematics.

In the individual telephone interviews, Non-National Board Certified teachers offered in-depth feedback about what changes could be made to keep them from burning out in the classroom. The importance of being heard seems to pervade many of these comments. A sample of their comments follows.

- “Take away the paperwork, the committees, the endless committees they come up with for everything.”
- “Every year there are more and more little things to do. There's no support. There's no help when you have inclusion classes. You just get this paper that says you're supposed to do all this stuff for these inclusion children but no help. The parents don't understand. It's just very demanding. They need to stop with this constant something new everyday.”
- “Teachers need a voice. I think the kind of curriculum that your students are ready for and can master is very important. Different students have different abilities. Having some input as to what is important to this class is essential. Because someone has dictated that you need to do this and they have decided what it is.”
- “Children need to be placed at the appropriate levels.”
- “Administrators need to be more open to suggestions from the teacher. Have a line of communication always open to the teacher. That is the one thing. There is no two-way communication. It always just comes down from on high.”
- “Talk to teachers, listen. Support decisions with discipline as well as with staff development.”

National Board Certified teachers were asked if they currently have the support they need to do their best work. Teachers' responses were varied. Table 4.21 below shows how National Board Certified Teachers felt about the level of support they have in their careers. (TERESA: IN METHODS , YOU SHOULD PROBABLY EXPLAIN HOW YOU COME UP WITH THESE CATEGORIES. IT'S NOT CLEAR TO ME HOW YOU DETERMINE WHAT IS EXCELLENT, GOOD, MODERATE, ETC?.)

Table 4.21 NBCTs' Rating of Support They Have	
Excellent	7
Good	23
Moderate	32
Okay	5
Not Good	6

It is important to note that thirteen National Board Certified teachers did not answer this question. It is clear from the responses that the majority of the teachers who did respond feel that they have adequate or nearly adequate support to do their best work in the classroom. However, more than half feel that their support is below good. This is a real concern. With the growing teacher shortage, it is very important that teachers feel that they have solid support. In the individual telephone interviews, many teachers expressed concerns about having enough technology for their students. The technology they were most often referring to is the graphing calculator. Students have to know how to use this calculator on End of Course tests. Many teachers felt that their students were at a disadvantage if they did not have the most up-to-date calculator to use in the classroom and they also felt students were

at a disadvantage if they did not have access to calculator to use at home with homework.

Another need of mathematics teachers is a reduction in class size. Because of the graduation requirement of four mathematics classes, more students are taking math, therefore, increasing the numbers of students in each class. This makes it more difficult for the teacher to grade papers, contact parents, give each student individual attention, and get to know the student on a more personal basis. While being interviewed, one teacher said, “They need to lower class size. According to research, class sizes of 15 to 20 make a big difference in student achievement. I believe this to be true.”

Non-National Board Certified teachers were also asked if they currently have the support they need to do their best work and their results painted a very different picture of support. Table 4.22 below shows how Non-National Board Certified Teachers felt about the level of support they have in their careers.

Excellent	11
Good	5
Moderate	6
Okay	3
Not Good	15

Of these teachers, more than half felt that they did not have the support they needed to do their best teaching. This finding clearly suggests the need for further research to address what may be a serious problem with support. With the growing teacher shortage, teachers need to feel that they are supported in their work. It is vital that they be given what they need to be successful in the classroom.

Individual telephone interviews were able to explore in-depth how teachers felt about the support they were getting to do their best teaching. These teachers, like the NBCT, felt that they needed adequate technology in the classroom. They felt that much of what they were now using was out-of-date and not beneficial for the students. These teachers also felt very strongly about the End-of-Course tests. Several? All ? A few? felt that the Department of Public Instruction should eliminate testing. They felt that these tests gave the “higher ups” too much control over the curriculum and therefore, too much control over teachers. In talking with these teachers, many passionate comments were made regarding testing and how it affected their ability to be the best teacher they could be.

Teachers, both NBCT and Non-NBCT, were asked on the survey to list the three most important reasons for leaving the teaching profession in the next five years if they plan to leave. As seen in Table 4.23, money and retirement were the most common responses for leaving among NBCTs. Money is an issue that has recurred several times in this analysis.

Money	12
Retirement	8
Less Stress	6
Work Overload	6

Though the four reasons listed in Table 4.23 were the most common ones, there were other less frequently mentioned reasons. A lack of respect and dealing with discipline day in and day out were each cited by four respondents. Three teachers said the lack of appreciation for the job they do is a reason to leave. The endless testing required by the state was another reason given by three teachers. Also

mentioned as reasons for leaving were class size, too much time required for the job, a lack of recognition, spending more time with family, and a lack of administrative support. The following quotes are from the individual telephone interviews when NBCTs were asked why they would leave the teaching profession.

- “A lot of it is actually the time spent afterschool. Instead of tutoring or working on lesson plans, you have to attend numerous meetings. We’re definitely overworked.”
- “I feel that we’re not looked upon as professionals”
- “I would leave if I didn’t feel effective anymore. If I lost my passion for it.”
- “If I lost support from the administration. If I had to go back to teaching lower level classes.”

When Non-NBCTs were asked why they were planning to leave, again money and retirement appear as the most commonly identified reasons. . The four reasons for leaving given most often by Non-NBCTs are presented in Table 4.24.

Retirement	19
Money	12
Respect	8
Administrative Support	5

These teachers also gave several other reasons for planning to leave the teaching profession. Stress was a factor for four of these teachers. Four teachers planned to seek better professional opportunities. Three teachers wanted to spend more time with their families. Other reasons listed by Non-NBCTs included the following: too much paperwork, returning to school, burnout, amount of testing required by the state (TERESA - AGAIN I'D AVOID COMMENTS ONLY GIVEN BY 1

RESPONDENT.) The following are comments about leaving the teaching profession made by Non-NBCTs during the individual telephone interviews.

- “It would have to be a great frustration with administrators or with lack of support from parents, students and administrators.”
- “Retirement. That seems to be the one thing all of my older friends are holding out for. The newer people seem to leave because of other jobs available.
- “If I could get my? own business started.”

The final open-ended question on the survey asked teachers to list the three most important reasons they stay in the profession if they planned to remain in the teaching profession more than five years. As is evident from Table 4.25, love of teaching, students, and the opportunity to "make a difference" were clearly important to many NBCTs who were planning to stay in the profession for more than five years. The schedule, including summer vacation, was also commonly mentioned as a factor that made staying in the profession attractive.

Love of Teaching	24
Students	24
Vacations/Schedule	15
To Make a Difference	12
Retirement	9
Salary	9
Collegiality	8
Stability	8
Subject Enjoyment	8

Other factors were reported by a more limited subset of respondents. Four teachers felt very supported by their administration. , while a similar number said they enjoyed

the challenge. Three teachers say they just love their job. Two teachers thought the working conditions were very good. The excerpts from the follow-up telephone interviews with NBCTs provided below give a clear picture of some of the reasons why teachers feel so strongly about staying in the profession.

- “The kids.”
- “I believe that I make a difference. I think that I’m good at what I do. It certainly isn’t for the pay. That’s another reason why I think people leave.”
- “I like working with young people. I am able to explain things. I enjoy what I do.”
- “Feeling effective. No being effective. As long as I am constantly challenged and not being bored.”
- “My colleagues, the subjects I teach, the students I teach. I feel like they are my own.”

Non-NBCTs offered many of the same reasons for why they planned to stay in the teaching profession. Table 4.26 lists the four responses that were reported most often by Non-National Board Certified teachers.

Table 4.26 Non-NBCTs Reasons for Remaining in the Profession	
Love of Teaching	12
Students	12
Vacations/Schedule	8
To Make a Difference	7

Again, there were less common responses of note. Money, the challenge of the work, and a strong level of interest in the subject material were each mentioned by three respondents. Two teachers love the relationships they have with their

colleagues. (TERESA - AGAIN, I'D SAY GET RID IF THESE ARE RESPONSES FROM ONLY ONE RESPONDENT.)

Similar to what was found in the NBCT interviews, comments from Non-NBCT telephone interviews provide a richer, more in-depth understanding of the reasons why teachers continue to be dedicated to their field. Excerpts from the Non-NBCT interviews follow. "Sheer joy of teaching. I love what I do."

- "Oh, I just love my job. I don't know any other way to explain it."
- "I just like teaching children. It's worthwhile. No matter what the downfalls are, it's always a worthwhile profession. You're helping children to learn and preparing them for their lives"
- "It's never boring. It's a fun job. You never get stuck in a rut. Just when you think you know what's going on, they (the students) will surprise you. It's a challenge. I like the challenge."

Chapter Five

Discussion of Data

Findings

The data collected and analyzed for this study revealed the wants and needs of high school mathematics teachers to be successful and satisfied in their jobs. It also unveiled potential differences between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers.

In looking at administrative support needs, teachers overall share a number of similar needs. The frequencies for these items were reported in Chapter 4. The

most important administrative support needs for high school mathematics teachers surveyed as part of this study were found to be:

- Adequate materials and supplies
- Increased salary
- Smaller class size
- Safe environment for teaching and learning
- More administrative support with discipline
- More quality time in the classroom

(TERESA: I'D PUT THE FOLLOWING SENTENCES IN YOUR METHODS. THIS IS GOOD.) The following two administrative needs were tested for statistical differences among NBCTs and Non-NBCTs.

- Recognition for accomplishments
- More control over schedule
-

A difference approaching statistical significance was found between the two groups on recognition of accomplishments. NBCTs felt that this was more important than Non-NBCTs. There was also a marginal difference between these two groups on more control over schedule with Non-NBCTs in this study wanting more control.

It was determined that *a telephone in the classroom, an office, and more teaching assistant support* were not very important to a majority of teachers. *Recognition for accomplishments, autonomy, more control over schedule, more planning time, more administrative support with parents, information about students in your classroom, less standardized testing, and fewer and more efficient meetings* were important to surveyed high school mathematics teachers.

In looking at professional development needs, again several needs emerged as important across respondents. The frequencies for these items were reported in

Chapter 4. The professional development needs that were most often rated important were as follows:

- Direct experiences as a teacher
- Teacher control of topics, needs, and time
- Teacher control of professional development
- Technology training
- Professional conferences/workshops

All of these items were rated a four or five by at least 75% of teachers. A possible relationship between Board certification and each of four professional development needs was assessed. The four professional development needs were as follows:

- One semester sabbatical upon completion of ten years of successful teaching
- Time to pursue study and pursue research independently
- Professional journals
- Being a professional development leader

Of these four, a statistically significant difference was found between the two groups on being a professional development leader. As hypothesized, NBCTs felt that this was more important than Non-NBCTs. However, NBCTs and Non-NBCTs did not differ significantly on the other professional development needs that were tested in this analysis.

It was felt by more than half of teachers that *travel opportunities*, (Teresa - *I don't see this in your graph and I think that's fine - this was question was problematic for respondents so I think it's advisable not to include it here unless you'd rather include it and just point out the limitations - I haven't read this part in Chapter 4 yet so maybe that's what you do?*) *time management training, undergraduate courses in field of specialization, professional journals, writing for publication, and being a team leader or department chair* were not very important professional needs. The lack of

support for writing for publications as an important professional development need was particularly striking. Only 5% of responding teachers rated writing for publications an important need (four or five). *Time to meet with support groups of teachers, latest curriculum innovations, , and graduate courses in field of specialization,* were important to a majority of the teachers surveyed.

The following professional characteristics were the characteristics that teachers most often rated as accurate descriptions of their professional or personal life.

In rating each of these items, at least 80% of all teachers reported a four or five.

- Committed to ongoing personal growth and development
- Committed to ongoing professional growth and development
- Have a personal spiritual relationship that is based on faith
- Self-reflective
- Passionate and enthusiastic about my work
- Task oriented about my work
- Work long hours
- Feel productive

In assessing findings for two of the professional characteristics, the investigator posited a relationship between Board certification and the characteristic of interest.

The two professional characteristics were:

- My work is integrated into all aspects of my life
- Tend not to take risks

Of these two, significant statistical difference was found between the two groups on my work is integrated into all aspects of my life. NBCTs in this study were more likely to report that work was integrated into all aspects of their life. The percent of teachers who characterized themselves as risk-takers did not appear to vary by group.

It was felt by a sizeable percent of teachers that *tend not to take risks, have a low threshold for stress, and tend to avoid stressful situations* did not accurately describe them. Some respondents seemed to have difficulty interpreting the stress items, so the reader should be cautious in generalizing based on these results. *My work is integrated into all aspects of my life, exhibit the capability to deal with stress successfully, and live a balanced life* each described about 2 out of 3 respondents. Analysis of survey data on personal characteristics suggested a set of characteristics that high school mathematics teachers commonly reported as accurately describing their personality. The typical survey respondent characterized him or herself as:

- Caring
- Cooperative
- Focused
- Sense of humor
- Independent
- Resourceful
- Resilient

Clearly these are characteristics that are valued in American society, so it is important to consider whether teachers may have misreported in order to present a more positive picture of their personality to the researcher and society more generally. If this misreporting exists, results may not accurately reflect teachers' "true" personality. This is the problem of social desirability, a potential limitation with self-reported data.

However, the investigator and the SRU statistician decided that these results could not be reported because of much missing data, which in result, make the data

invalid. (TERESA: MISSING SUMMARY OF RESULTS FOR CREATIVITY AND HIGH ENERGY BY BOARD CERTIFICATION?)

In placing themselves on a stage of the career cycle, it was found that the majority of National Board Certified high school mathematics teachers perceive themselves to be expert/master teachers or distinguished teachers, while most Non-National Board Certified teachers categorize themselves as "professional teachers".

In the data analysis, it was also found that National Board Certified high school mathematics teachers in this study were more satisfied in their jobs than Non-National Board Certified high school mathematics teachers. A chi-squared test of independence was run to determine whether there was a statistically significant difference between the two groups of teachers regarding their job satisfaction. The test revealed a significant difference.

The qualitative findings of the study included responses from five open-ended questions on the survey and comments from the individual telephone interviews. (THE PRECEDING TEXT SHOULD BE PART OF METHODS)

When asked to list their three most important professional needs, the following items were the needs most frequently cited by National Board Certified teachers. They are listed in order of the number of mentions with the first item being the most commonly mentioned .

- More time
- Administrative support
- Supplies/materials
- Staff development
- Increase in salary
- Smaller classes

The following items were the needs that appeared most often among responses from Non-National Board Certified teachers. Again, the first item listed was the most commonly mentioned, the second was the second most commonly mentioned, etc.

- Administrative support
- Supplies/materials
- Staff development
- Time
- Parental support
- Smaller classes
- Increase in salary
- Technology

Overall these teachers seemed to have similar professional needs. Both groups of teachers felt that *time, administrative support, supplies/materials, staff development, Increase in salary, and smaller classes* were important. There were some differences between the groups, including the greater support for time as an important need among Board certified teachers and the importance of technology as a need identified by non-Board Certified teachers.

When asked to list the three most important changes needed for them to do their best teaching, the most common responses among National Board Certified teachers were as follows . The responses are listed by frequency, with the first item being the most commonly mentioned change.

- More time
- Smaller classes
- Parental support
- Administrative support
- Less testing
- Salary

The picture among Non-National Board Certified teachers appears somewhat similar. Again, in order of decreasing frequency, Non Board certified teachers listed the following changes as important in supporting their best teaching.

- Smaller classes
- Time
- Less testing
- Administrative support
- Supplies/materials
- Staff development

NBCTs and Non-NBCTs both felt that they needed *more time, better administrative support, smaller classes, and less testing*. There were some differences on this question. A subset of NBCTs identified higher salary and parental support as important needs while some Non-NBCTs wanted supplies/materials and staff development.

When asked to rate the support they have, 86.3% of NBCTs felt they had moderate to excellent support while 13.7% felt their support was okay or not good (WHERE DO THESE DATA COME FROM? I DON'T SEE A QUESTION THAT ASKS FOR AN EXCELLENT/MODERATE/OKAY/NOT GOOD RATING?). Of the Non-NBCTs, 55% felt they had moderate to excellent support while 45% of these teachers felt their support was okay or not good. Clearly, the National Board Certified teachers surveyed as part of this study felt that they have more support in their jobs.

Teachers were asked to list their reasons for leaving the profession if they planned to leave within the next five years. The NBCTs gave the following reasons.

- Money
- Retirement
- Less stress

- Work overload

The most common reasons for leaving the profession among Non-NBCTs were as follows:

- Retirement
- Money
- Respect
- Administrative support

Both NBCTs and Non-NBCTs would leave within the next five years because of retirement or money. NBCTs would also leave because they feel stressed and overloaded with work, while Non-NBCTs focused on a lack of respect and a lack of administrative support in addition to retirement and salary concerns.

Teachers were also asked to list their reasons for staying in the profession if they planned to stay for the next five years. The NBCTs gave the following reasons.

- Love of teaching
- Students
- Vacations/schedule
- To make a difference
- Retirement
- Salary
- Collegiality
- Stability
- Subject enjoyment

Non-NBCT responses were a subset of the NBCT responses. The four most common Non-NBCT responses are detailed below.

- Love of teaching
- Students
- Vacations/schedule
- To make a difference

Both NBCTs and Non-NBCTs would stay for the next five years because of their love of teaching and the students. NBCTs would also stay for many other reasons that are listed above. Non-NBCTs would also stay because they like the vacations

and the schedule works nicely with a family and they want to make a difference in the lives of students.

The individual telephone interviews supported the findings from the open-ended survey questions. Supporting comments from teachers were given in Chapter 4. Some of the key findings from the questions regarding the process and impact of Board certification on surveyed teachers are highlighted here. National Board Certified teachers were asked how the certification process has contributed to their success and satisfaction on the job. The teachers interviewed had very positive things to say about the impact of National Board Certification on teaching. The following comments were given.

- “It made me more aware of what I was doing. It pinpoints why you do what you do and that there is a foundation for what you teach and how you teach it.”
- “I think people look up to you. They ask you for advice. That may not be the right word particularly. You know, the fact that I can help someone else do this job and like it and make it a CAREER.”
- “I started changing the way I taught. We were on the block scheduling and I was mainly lecturing, teaching the way I was taught. But once I went through the process I started thinking of creative ways to teach the lessons. It was really different afterwards.”
- “It helped me learn how to reflect on what I do. To think about what I do and why.”

- “It forced me to be more analytical on what I do, why I do it and its effectiveness. It emphasized to me the importance of reflection. I’ve noticed the need to not sit still and become stale.”
- “It made me take a closer look at myself. It got me out of some of the ruts I was in. It got me more into trying new things. I was weak on parent contact. It made me more aware of how appreciative parents are when you are truly concerned about their children.”
- “My personal feeling about National Board Certification is that it validates what good teachers should be doing. It doesn’t necessarily make me a better teacher. It allows me to showcase my teaching and allows me to advance without leaving the classroom.”
- “It taught me to be reflective. It causes you to be able to plan forward and anticipate more problems. It taught me to use assessment as a teaching tool. I also use a lot more cooperative learning than I did before.”
- “It’s gotten me a pay raise and caused me to be more reflective about what I do.”

Clearly, teachers who went through the certification process feel that it was worthwhile. A common theme that emerged from the telephone interviews was that of self-reflection. The process caused these teachers to examine what they do, how they do it, and why they do it.

National Board Certified teachers were also asked what they learned about themselves while pursuing this certification. The following comments from telephone interviews reveal what they learned.

- “That I am a little more traditional than I thought I was. I have a really good relationship with the students and extending it to the family made that more valuable.”
- “I procrastinate. As a teacher, watching the videos was incredibly revealing. You get drilled with the little TPAI instrument you gotta call on everyone in class. Looking at the video, I was relatively impressed that within a 3-minute time span I had asked almost every kid a question. I continue that cycle for the first 15 minutes of the lesson. The kids were engaged. It forced me to think about assessment and assignments. You know we can get lazy as educators. You know, “Do page 112 #1-15. You couldn’t use that with National Board. You had to come up with something that fit the entry. That really challenged me. It encouraged me to continually look for more authentic activities that encourage growth and increase of knowledge in the kids.”
- “It made me more deliberate in what I did. It made me think about something a little bit more before I did it.”
- “That I am capable of so much more.”
- “The hard thing for me was talking about things I do well. I learned that according to National Board, I do things well. I learned that there were some things I didn’t do so well and that it was good to experience change after many years of teaching.”
- “That I was doing what they (National Board) thought I should be doing.”
- “That I’m incredibly disorganized. Long-range planning is difficult for me.”

- “It provided me the opportunity to examine why I do what I do. It gave me an opportunity to look at possible changes and validated what I thought I did well.”

Through the reflective process of National Board Certification, these teachers learned a lot about themselves. They learned what they may need to do differently in the classroom as well as what they were already doing effectively. (TERESA: THIS IS VERY "PRO" BOARD CERTIFICATION. WERE THERE ANY NEGATIVE COMMENTS ABOUT BOARD CERTIFICATION JUST SO THAT THE ARGUMENT IS NOT MADE THAT YOU WERE ONLY PRESENTING SUPPORT FOR YOUR VIEW THAT BOARD CERTIFICATION IS A GOOD THING.)

Discussion

The first research question dealt with administrative support. The investigator needed to determine the most important administrative support needs of high school mathematics teachers. As stated in the literature review, there are hygiene factors that affect people's attitudes about work. Herzberg concluded that factors such as company policy, supervision, interpersonal relations, working conditions, and salary are hygiene factors in the business world (Gawel, 1997). According to Herzberg the absence of these factors can create job dissatisfaction (Gawel, 1997). The findings of the survey support Herzberg's work. It was determined that many of these same factors applied to teachers as well. Teachers felt that more administrative support with discipline was very important. This correlates with Herzberg's supervision. Teachers felt that salary was very important. This is one of Herzberg's hygiene factors. Teachers felt that smaller class size, adequate materials and supplies, and

safe environment for teaching and learning were important. These correlate with Herzberg's working conditions.

The absence of the needs that teachers felt were very important were some of the reasons why teachers said they would leave the teaching profession. Salary was one of the reasons given by both NBCTs and Non-NBCTs. Administrative support and lack of respect were also mentioned. Stress also causes teachers to consider leaving the profession. According to the literature, various types of stress among teachers show a consistent negative relationship with job satisfaction (Reyes, 1990). The literature reveals many things that cause teachers stress. Large class sizes, scarcity of planning time, lack of support for discipline, inadequate materials, lack of administrative support, lack of parental support, and workload issues are all issues that teachers have cited as causing them stress on their job (Yee, 1990). The teachers participating in this study listed all of these things as important needs.

The first research question also addressed whether administrative support needs are related to the personal or professional characteristics of high school mathematics teachers. Given the limited variability in many of the items and the lack of any strong theoretical evidence to suggest the presence of bivariate relationships, this part of the research question was not explored. The investigator did examine potential differences in the administrative support needs of NBCTs and Non-NBCTs. A marginally significant difference was found between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers in the need for recognition for accomplishments. In

this study, NBCTs wanted more recognition for accomplishments. In assessing whether Non-NBCTs and NBCTs vary on the need for more control over schedule, Non-NBCTs in this study were more likely to rate this as an important need as compared to their NBCT counterparts. However, this difference fell short of statistical significance at the .05 level.

The second research question addressed professional development. The investigator was to determine the most important professional development needs of high school mathematics teachers. The data presented here on professional development needs revealed information that is supported by the literature. Teachers in this study say they need control of topics and time for staff development. They need control of their professional development. As stated in the literature review, the content of professional learning must come from both inside and outside the learner and from both research and practice (Ideas that..., 1998). Teachers should be able to collaborate and plan their professional development and the ways in which they will learn (Richardson, 1998).

The second research question also addressed whether professional development needs were associated with the personal or professional characteristics of high school mathematics teachers. The need for time to pursue independent study and research was not related to teacher's level of education or teaching experience. Education was similarly unrelated to teachers' rating of professional journals as an important professional development need. Teachers with a Bachelor's degree were just as likely as those with a Master's degree or PhD to report professional journals as an important professional development need.

Finally, it was hypothesized that teaching experience would be related to the need for time to observe mentor teachers, but the data did not support this assertion.

The investigator also explored the possibility of differences in the professional development needs of NBCTs and Non-NBCTs. In examining the data, a statistically significant difference was found between National Board Certified high school mathematics teachers and Non-National Board Certified high school mathematics teachers in the desire to be a professional development leader. 50% of NBCTs felt that being a professional development leader was an important need for them compared to less than 30% of Non-NBCTs. However, there were no statistically significant associations between Board certification and several other professional development needs, including latest evaluation/assessment techniques, one semester sabbatical, time to pursue independent study and research, and professional journals. There are a number of potential explanations for the lack of support for the proposed hypotheses. The limitations of small sample size and potential comprehension problems with some of the survey items are two explanations that are offered.

The third research question addressed potential differences in the perceived professional and personal characteristics of NBCTs and Non-NBCTs. Concern about potential social desirability bias and high levels of missing data for a subset of the personal characteristics precluded extensive analysis of data from this section of the survey. As described earlier, in answering the survey, people may convey themselves as they think a good teacher should be, rather than reporting their true personality characteristics. This is termed social desirability. Chapter 4 detailed the

item by item findings for personal and professional characteristics. Responses for two of the professional characteristics, "Tend not to take risks" and "My work is integrated into all aspects of my life", were examined by Board certification. There was no statistically significant difference in risk-taking. There was a relationship between integrating work into all aspects of life and Board certification. NBCTs and Non-NBCTs did not differ significantly on creativity or high energy, two personality characteristics that were considered in this analysis.

The fourth research question asked whether NBCTs and Non-NBCTs differ in their placement on the Career Cycle. As stated earlier, the majority of NBCTs perceive themselves to be expert/master or distinguished teachers while the majority of Non-NBCTs place themselves at the stage of "professional teacher". This was expected given the descriptions of the different stages on the survey.

As stated in the literature, job satisfaction can be defined as "the pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" or as "the willingness to choose teaching as one's occupation the second time" (Reyes, 1990). As found in this study, there are many things that teachers, both NBCTs and Non-NBCTs alike, feel are important to the satisfaction they gain from doing their jobs. Motivation has been found to increase job satisfaction. According to Maslow, everyone seeks to satisfy two basic levels of needs: lower level needs (physiological, security, the need for love and belonging) and higher level needs (esteem of both self and others and self-actualization or achieving one's full potential). It is evident from the comments made by National Board Certified teachers during telephone interviews that they find these higher level

needs important and seek to fulfill these needs. The certification process assisted in recognizing and achieving their full potential in the classroom. It was also determined that National Board Certified teachers included in this study feel that recognition for accomplishments is important to them. This gives them security and adds to their esteem of self.

Comparison of Findings Among Studies

Several researchers have used this survey in slightly different forms with different populations of participants. Dr. Barbara Day, Ph.D., chair of the Department of Curriculum and Instruction of the School of Education and her doctoral students initially developed the survey to elicit the wants and needs of North Carolina teachers. The survey has been used with a local population of teachers in the Chapel Hill-Carrboro School System (Day, Yarbrough, & Brader-Araje, 1998), with National Board and Non-National Board Certified Teachers (Bivins, 2000), with career oriented key woman educators of Delta Kappa Gamma (Bivins, 2001, Choi, 2000), and with North Carolina Teaching Fellows (Orisini, 2000).

According to Dr. Day, there are studies now in progress using the survey with a variety of grade levels in North Carolina, Canada, Japan, and Australia. At this time, three doctoral students are working with the same version of the survey. Katie O'Connor is sampling 600 third – fifth grade teachers, Diana Dagenhart sampled 600 middle school teachers for her recent study of the factors related to job success and satisfaction among North Carolina teachers, while this investigator's particular sample was 260 high school mathematics teachers.

The particular version of the survey, developed for the O'Connor, Petty, and Dagenhart studies, relied on the work of Gall, Borg, and Gall (1996) which suggested eight major steps in using a survey or questionnaire for educational research. This version differed somewhat in format but was otherwise very similar to the originally developed survey (See Appendix A).

The findings of one of the pilot studies were similar to those of this study. The survey was used in 1998 with a local population of 142 teachers in the Chapel Hill-Carboro School System (Day, Yarbrough, & Brader-Araje, 1998). Though relying on a small convenience sample, their population did mirror the demographic make up of the state with 76% white, 80% female, and 61% elementary school respondents.

They found that regardless of performance status, career cycle, grade level or years of experience, four needs (THIS ISN'T CLEAR?) were most valued across respondents: *increased salaries, reduced class size, increased allocated planning time, and respect as professionals*. These researchers found that the lack of adequate compensation was the number one reason for leaving the profession, with class size coming in second. Their respondents noted that in order to teach in North Carolina's public schools, a minimum four-year degree and state certification were required, yet teachers still received salaries well below the national average. This pilot research team called for adding a qualitative component to the research, which became the five open-ended questions and the individual and focus group interviews that were proposed as part of this study. Exploring teacher wants and needs using a more qualitative approach would inform a richer understanding of the factors associated with job success and satisfaction.

When the survey was used not only to look for wants and needs but also to compare National Board and non-National Board Certified Teachers (Bivins, 2000), the data showed that both groups somewhat agreed on their top wants and needs for success and satisfaction in the classroom. These were *increased salaries, more planning time, respect as professionals, and smaller class size*. The two groups differed on factors regarding personal characteristics, teacher efficacy, and professional development needs.

National Board Certified teachers tended to select wants and needs more in line with leadership roles such as mentoring, leadership, and serving as the cooperating teacher with student teachers. These choices were seen as logical since this group might have more opportunity, expertise, and experience to move to roles that garner the professional respect usually given to master teachers. The Non-Board Certified teachers, however, selected choices that were more appropriate for someone learning his/her craft such as adequate materials and supplies, parental support, and direct experiences as a teacher. Their choices seemed to indicate more focus on the more fundamental aspects of the career and that some tasks might not yet be routine or automated.

The Bivins study was most like this particular study since it not only asked what North Carolina teachers wanted and needed for success and satisfaction in the classroom but also asked if there were differences in what National Board Certified teachers and Non-National Board Certified teachers wanted and needed. If indeed the same type differences were seen, these findings could corroborate not only what teachers in general are saying but that National Board Certification is making a

difference in the professional quality of the state's teachers. Indeed, the exploratory findings reported here do suggest some similarities across the two studies both at the aggregate level across all respondents and by Board certification.

When career oriented **key woman educators** of Delta Kappa Gamma were investigated using the survey (Bivins, 2001, Choi, 2000), it was revealed that.

When North Carolina **Teaching Fellows** (Orisini, 2000) were sampled, it was noted that....

Recommendations

Implications for Future Research

There are several avenues that should be pursued to build on the exploratory research presented here. A replication of this study with a larger sample of National Board Certified high school mathematics teachers would be a logical next step. Findings from a larger sample could lend support to the results presented here. A larger sample would enhance the ability to detect additional between group differences. Furthermore, a large scale study would facilitate the use of multivariate statistical techniques to control for demographic and other factors that may affect key survey measures.

Future research should also incorporate high school teachers of different subjects, for example, history or art. It would be important to determine if there are similarities or differences in teacher need and wants across different subject matter areas. What would the differences be?

Further research is needed to investigate the reasons teachers leave the profession and why they stay. In the state of North Carolina, it is widely known that salary is a big reason for teachers leaving. However, this study reveals that the picture is more complicated. Teacher turnover in the state of North Carolina continues to grow. It is depressing to think of what this holds in store for our children and their children. Teachers need support systems at many different levels to do a good job. More research should attempt to disentangle the complex picture of teacher needs and wants.

Finally, it would be interesting to delve further into National Board Certification. The researcher could look closer at the characteristics of National Board Certified teachers. What do they do in the classroom to make themselves successful? How different are they than their colleagues and in what ways? Do their students have higher rates of achievement?

All of these suggestions for future research offer important additional information about teachers. This information would be useful to administrators, communities, parents, boards of education, state departments, and legislatures. It is time to give teachers what they need to be successful and satisfied in their jobs. For the job that they do, we owe them this.

Chapter Six

References

The appendices and bibliography are located in this chapter. The following support documents are contained in the appendices.

- Survey questionnaire
- Introductory letter
- Cover letter
- Consent letter for telephone interviews
- Script for telephone interview and supporting documents

The following documents also appear in the appendices.

- IRB proposal
- Grant proposal
- Funding agreement
- Raw data

The bibliography contains all references used in this study.

APPENDIX A

SURVEY INSTRUMENT

*Identifying the Wants and Needs of
North Carolina Teachers
For Job Success and Satisfaction*



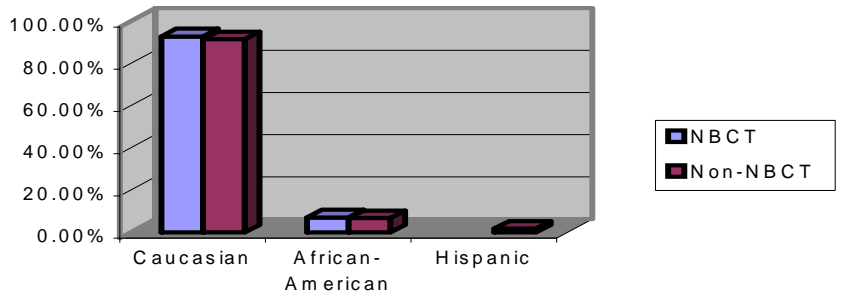
Spring 2002

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Teresa M. Petty

Candidates, Ed.D. in Curriculum and Instruction
University of North Carolina - Chapel Hill

Barbara D. Day, Ph.D.
Professor, Chair of Curriculum and Instruction

Table 4.3 Ethnicity



307 Peabody Hall, CB# 3500
University of North Carolina
Chapel Hill, NC 27599
919-966-3291

Thank you for completing this survey!

Administrative Support Needs

Administrative Support: Rate the importance of the following administrative or governmental support systems. Choose if the item contributes significantly or does not contribute to your professional needs. Fill-in the circle with a dark pencil or pen.

Contributes Significantly = 5.....4.....3.....2.....1 = Does Not Contribute

1	Adequate materials and supplies	5	4	3	2	1
2	Telephone in classroom	5	4	3	2	1
3	Office	5	4	3	2	1
4	Increased salary	5	4	3	2	1
5	Recognition for accomplishments	5	4	3	2	1
6	Autonomy	5	4	3	2	1
7	Smaller class size	5	4	3	2	1
8	Safe environment for teaching and learning	5	4	3	2	1
9	More planning time	5	4	3	2	1
10	More control over schedule	5	4	3	2	1
11	More teaching assistants	5	4	3	2	1
12	More administrative support with discipline	5	4	3	2	1
13	More administrative support with parents	5	4	3	2	1
14	More administrative support with other (_____)	5	4	3	2	1
15	Information about students in your classroom	5	4	3	2	1
16	... Medical and psychological information	5	4	3	2	1
17	... Criminal and violent records	5	4	3	2	1
18	... Other (_____)	5	4	3	2	1
19	More quality time in the classroom	5	4	3	2	1
20	... Less interruptions	5	4	3	2	1
21	... Less standardized testing	5	4	3	2	1
22	... Fewer and more efficient meetings	5	4	3	2	1
23	Other (_____)	5	4	3	2	1

Community Support: Rate the importance of the following community support systems. Choose if the item contributes significantly or does not contribute to your professional needs. Fill-in the circle with a dark pencil or pen.

Contributes Significantly = 5.....4.....3.....2.....1 = Does Not Contribute

24	Respect as professional	5	4	3	2	1
25	Students who come to school well-rested and fed	5	4	3	2	1
26	Parental support for teacher activities/decisions	5	4	3	2	1
27	Other (_____)	5	4	3	2	1

Professional Development Needs

Professional Development: Rate the importance of the following professional development opportunities. Choose if the item contributes significantly or does not contribute to your professional needs. Fill-in the circle with a dark pencil or pen.

Contributes Significantly = 5.....4.....3.....2.....1 = Does Not Contribute

28	Time to meet with support group of teachers	5	4	3	2	1
29	Teacher control of professional development	5	4	3	2	1
30	Teacher control of topics, needs, and time	5	4	3	2	1
31	Travel opportunities	5	4	3	2	1
32	Latest curriculum innovations	5	4	3	2	1
33	Efficacy training	5	4	3	2	1
34	Latest evaluation/assessment techniques	5	4	3	2	1
35	Time to observe mentor teachers	5	4	3	2	1
36	Mentor teacher training	5	4	3	2	1
37	Technology training	5	4	3	2	1
38	Time management training	5	4	3	2	1
39	One semester sabbatical upon completion of ten years successful teaching	5	4	3	2	1
40	In-service training provided by school district	5	4	3	2	1
41	Time to pursue study and pursue research independently	5	4	3	2	1
42	Graduate courses in field of specialization	5	4	3	2	1
43	Consultations with specialists	5	4	3	2	1
44	Undergraduate courses in field of specialization	5	4	3	2	1
45	Professional conferences/workshops	5	4	3	2	1
46	Professional journals	5	4	3	2	1
47	Direct experiences as a teacher	5	4	3	2	1
48	Other (_____)	5	4	3	2	1

Professional Activities: Rate the importance of the following professional activities. Choose if the item contributes significantly or does not contribute to your professional needs. Fill-in the circle with a dark pencil or pen.

Contributes Significantly = 5.....4.....3.....2.....1 = Does Not Contribute

49	Writing for publications	5	4	3	2	1
50	Being a professional development leader	5	4	3	2	1
51	Serving as a supervisor of student teachers	5	4	3	2	1
52	Being a team leader or department chair	5	4	3	2	1
53	Assuming mentoring roles	5	4	3	2	1
54	Serving in leadership roles	5	4	3	2	1
55	Other (_____)	5	4	3	2	1

Summary of Professional Needs

56] Overall, list your three most important professional needs as a teacher.

57] List the three most important changes that are needed to support your best teaching.

58] To what extent do you believe you actually have what you need to support your best teaching?

59] If you plan to leave the teaching profession within five years, list the three most important reasons for your decision.

60] If you plan to remain in the teaching profession more than five years, list the three most important reasons for your decision.

Career Cycle

61] Select one of the following categories that best describe the current phase of your teaching career. Fill-in the circle with a dark pencil or pen.

Novice Teacher. The novice cycle begins when preservice teachers first encounter practicum experiences as part of their teacher training. The cycle continues through student teaching and beginning intern experiences.

Apprentice Teacher. The apprentice cycle begins for most teachers during student teaching when the preservice teacher is given full responsibility for planning and delivering instruction. The cycle continues through the first two or three years of teaching.

Professional Teacher. The professional cycle begins when teachers grow in confidence and become secure in their role as professional educators. These teachers view themselves as lifetime educators and staff the majority of classrooms.

Expert/Master Teacher. The expert/master cycle signifies achievement of the high standards required by the National Commission on Teaching and America's Future. These teachers meet the expectations required for National Board certification.

Distinguished Teacher. The distinguished cycle is reserved for those teachers who are truly gifted in their field. These teachers exceed current expectations for what educators are expected to know and do.

Emeritus Teacher. The emeritus cycle is reserved for those teachers who have formally retired, but because of their expertise and devotion continue to be active and contributing members of the profession. Through consultation, volunteerism, mentoring, and activity with professional groups, these teachers are strong advocates for education. The cycle begins when teachers begin to make plans to formally retire from teaching.

Professional & Personal Characteristics

Professional Characteristics: Rate the accuracy of the following statements. Choose if the item describes accurately or does not describe your professional or personal life. Fill-in the circle with a dark pencil or pen.

Describes Accurately = 5.....4.....3.....2.....1 = Does Not Describe

62	Committed to ongoing personal growth and development	5	4	3	2	1
63	Committed to ongoing professional growth and development	5	4	3	2	1
64	Have a personal spiritual relationship that is based on faith	5	4	3	2	1
65	Oriented toward maintaining my comfort level	5	4	3	2	1
66	Tend not to take risks	5	4	3	2	1
67	Work long hours	5	4	3	2	1
68	Feel productive	5	4	3	2	1
69	Task oriented about my work	5	4	3	2	1
70	Passionate and enthusiastic about my work	5	4	3	2	1
71	My work is integrated into all aspects of my life	5	4	3	2	1
72	Exhibit the capability to deal with stress successfully	5	4	3	2	1
73	Live a balanced life	5	4	3	2	1
74	Self-reflective	5	4	3	2	1
75	Aware of warning signals of stress					
76	Have a low threshold for stress	5	4	3	2	1
77	Tend to avoid stressful situations	5	4	3	2	1

Personal Characteristics: Rate the accuracy of the following statements. Choose if the item describes accurately or does not describe your professional or personal life. Fill-in the circle indicating your choice with a dark pencil or pen.

Describes Accurately = 5.....4.....3.....2.....1 = Does Not Describe

78	Balanced	5	4	3	2	1
79	Resigned	5	4	3	2	1
80	Independent	5	4	3	2	1
81	Creative	5	4	3	2	1
82	Focused	5	4	3	2	1
83	Flexible	5	4	3	2	1
84	High energy	5	4	3	2	1
85	Integrated lifestyle	5	4	3	2	1
86	Like routine	5	4	3	2	1
87	Cooperative	5	4	3	2	1
88	Sense of humor	5	4	3	2	1
89	Compulsive	5	4	3	2	1
90	Resourceful	5	4	3	2	1
91	Reserved	5	4	3	2	1
92	Self-actualized	5	4	3	2	1
93	Low-key	5	4	3	2	1
94	Resilient	5	4	3	2	1
95	Serious	5	4	3	2	1
96	Shy	5	4	3	2	1
97	Organized	5	4	3	2	1
98	Initiating	5	4	3	2	1
99	Caring	5	4	3	2	1

Professional & Personal Characteristics

Select one of the following responses that best describe your professional or personal life. Fill-in the circle next to your choice with a dark pencil or pen.

- 100] Age _____
- 101] Gender Female Male
- 102] Ethnicity Caucasian African-American Hispanic
 Asian Other (_____)
- 103] NC region Mountain Piedmont Coastal
Plain
- 104] Home location Rural Urban Suburban
- 105] School location Rural Urban Suburban
- 106] Academic Degree(s) _____
- 107] Certification Lateral Entry Regular Advanced
- 108] Teaching experience in years _____
- 109] Teaching position Preschool Elementary Middle
 Secondary Other (_____)
- 110] Predict length of teaching career in years _____
- 111] Job satisfaction Very Satisfied 5...4...3...2...1 Very
Unsatisfied
- 112] Teaching honors NC Teaching Fellow
 NC Principal Fellow
 School Teacher of the Year
 District Teacher of the Year
 State Teacher of the Year
 National Teacher of the Year
 National Board certification
 Milken Award Winner
 Golden Apple Award
 Christa McAuliffe Fellows
 Terry Sanford Award
 Governor's Business Awards
 Other (_____)

113] Please check the box at right if you might be willing to participate in a 45-60 minute telephone or focus group interview during

Thank you for completing this survey!

Appendix B – Introductory Letter

March 25, 2002

Dear High School Mathematics Teacher,

I am pleased to invite you to be in a research study that looks at the wants and needs of North Carolina high school mathematics teachers for job success and satisfaction conducted by the Curriculum and Instruction Division of the University of North Carolina at Chapel Hill. In this rapidly changing environment, factors concerning success and satisfaction as well as the characteristics of top quality teachers are of keen interest to schools, districts and the state. The career cycle of teachers and the impact of higher standards on the profession will also be investigated.

Barbara Day, faculty advisor, and I are conducting this segment of a much larger study canvassing over 5000 North Carolina Teachers. We hope to identify the factors that will help hire and retain quality teachers and those factors that help veteran teachers remain enthusiastic until retirement.

In about a week, you will receive a questionnaire. It should take less than ten minutes to fill out. We hope you will respond quickly in the envelope provided. You will be sent a reminder after three weeks because a high response rate will give us more representative data. On the questionnaire, you will also be asked if you would consider participating in a focus group or individual telephone interview.

We will make every effort to protect your privacy. We will not use your name in any of the information we get from this study or in any of the research reports. Numbers on the survey are used for tracking purposes only and will tell us who to send reminders to after three weeks. When the study is finished, the key showing the code number with your name will be destroyed. Since we will be making every effort to protect your privacy, we ask that you agree that we may use any information we get from this research study in any way we think is best for publication or education.

We do not know of any personal risk or discomforts you will have during this study. You decide on your own to participate. You have the right to refuse, or to stop at any time.

The Academic Affairs Institutional Review Board (AA-IRB) of the University of North Carolina at Chapel Hill has reviewed and approved this study. If you have any concerns about your rights in this study, you may contact the AA-IRB at 919.962.7761 or aa-irb@unc.edu.

If you have any questions, you may email me at cheer1@asheboro.com or Dr. Barbara Day at bday1@email.unc.edu.

Thank you, in advance, for helping with this important research study!

Teresa McPherson Petty

University of North Carolina at Chapel Hill

Appendix C – Cover Letter for Initial Mailing and Follow-ups

(Initial Mailing)

April 1, 2002

Dear North Carolina Mathematics Teacher,

Greetings and thank you again for participating in this important research study that looks at the wants and needs of North Carolina teachers for success in the classroom. The Curriculum and Instruction Division of the University of North Carolina at Chapel Hill is conducting this study. Your name was randomly selected from the pool of over 4,000 high school mathematics teachers in North Carolina.

In this rapidly changing environment, factors concerning what is needed to do your best job in the classroom are of keen interest to schools, districts and the state. The personal and professional characteristics of quality teachers like you need to be identified and the importance of administrative support and professional development need to be studied. We will also be asking questions about the career cycle of teachers and the impact of higher standards.

Teresa M. Petty, doctoral student, and Dr. Barbara Day, faculty advisor, are conducting this segment of a much larger survey canvassing over 5000 North Carolina Teachers in kindergarten through high school, and involving six different researchers.

Enclosed, you will find the survey. It should take about ten minutes to fill out. We hope you will respond quickly in the envelope provided. We will send a reminder after two weeks since a high response rate will give us more representative and accurate data.

Be sure to ***check the box*** on the last page if you would be willing to be called for an individual or focus group interview. This is in no way required but will add interest to our findings. There are no personal risks and you can decide on your own whether or not to participate.

Your privacy is very important to us therefore, we will make every effort to protect your privacy. We will not use your name in any part of this study. Numbers are used for tracking purposes only and will tell us who to send reminders to after two weeks. When the study is finished, the names will be destroyed. Since we will be making every effort to protect your privacy, we ask that you agree that we may use the information we get from this research study in any way we think is best for publication or educational purposes.

The Academic Affairs – Institutional Review Board (AA-IRB) of the University of North Carolina at Chapel Hill has approved this study. If you have any concerns about your rights in this study, you may contact the Chair of the AA-IRB, Barbara Davis Goldman, at CB#4100, 201 Bynam Hall, UNC-CH, Chapel Hill, North Carolina, 27599-4100, 919.962.7761. If you have any questions, you may email: cheer1@asheboro.com or bday1@email.unc.edu.

*Thank you, in advance, for helping with this important research study!
We can't wait to hear what you have to say.*

Kindest regards,

Teresa M Petty
10444 Randleman Road
Randleman, NC 27317
(336) 498-9712

Dr. Barbara Day
UNC-Chapel Hill
307 Peabody Hall CB #3500
Chapel Hill, NC 27599-3500
(919) 966.3291

(First Follow-up)

April 21, 2002

Dear North Carolina Mathematics Teacher,

I am writing again to ask you to participate in this important research study that looks at the wants and needs of North Carolina teachers for success in the classroom. The Curriculum and Instruction Division of the University of North Carolina at Chapel Hill is conducting this study. Your name was randomly selected from the pool of over 4,000 high school mathematics teachers in North Carolina.

In this rapidly changing environment, factors concerning what is needed to do your best job in the classroom are of keen interest to schools, districts and the state. The personal and professional characteristics of quality teachers like you need to be identified and the importance of administrative support and professional development need to be studied. We will also be asking questions about the career cycle of teachers and the impact of higher standards.

Teresa M. Petty, doctoral student, and Dr. Barbara Day, faculty advisor, are conducting this segment of a much larger survey canvassing over 5000 North Carolina Teachers in kindergarten through high school, and involving six different researchers.

Your privacy is very important to us therefore, we will make every effort to protect your privacy. We will not use your name in any part of this study. Numbers are used for tracking purposes only. When the study is finished, the names will be destroyed. Since we will be making every effort to protect your privacy, we ask that you agree that we may use the information we get from this research study in any way we think is best for publication or educational purposes.

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We can't wait to hear what you have to say.*

Kindest regards,

Teresa M Petty
10444 Randleman Road
Randleman, NC 27317
(336) 498-9712

Dr. Barbara Day
UNC-Chapel Hill
307 Peabody Hall CB #3500
Chapel Hill, NC 27599-3500
(919) 966.3291

(Third Follow-up)

July 30, 2002

Dear North Carolina Mathematics Teacher,

I am writing once again to ask you to participate in this important research study that looks at the wants and needs of North Carolina teachers for success in the classroom. The Curriculum and Instruction Division of the University of North Carolina at Chapel Hill is conducting this study. Your name was randomly selected from the pool of over 4,000 high school mathematics teachers in North Carolina.

In this rapidly changing environment, factors concerning what is needed to do your best job in the classroom are of keen interest to schools, districts and the state. The personal and professional characteristics of quality teachers like you need to be identified and the importance of administrative support and professional development need to be studied. We will also be asking questions about the career cycle of teachers and the impact of higher standards.

Teresa M. Petty, doctoral student, and Dr. Barbara Day, faculty advisor, are conducting this segment of a much larger survey canvassing over 5000 North Carolina Teachers in kindergarten through high school, and involving six different researchers.

Your privacy is very important to us therefore, we will make every effort to protect your privacy. We will not use your name in any part of this study. Numbers are used for tracking purposes only. When the study is finished, the names will be destroyed. Since we will be making every effort to protect your privacy, we ask that you agree that we may use the information we get from this research study in any way we think is best for publication or educational purposes.

The Academic Affairs – Institutional Review Board (AA-IRB) of the University of North Carolina at Chapel Hill has approved this study. If you have any concerns about your rights in this study, you may contact the Chair of the AA-IRB, Barbara Davis Goldman, at CB#4100, 201 Bynam Hall, UNC-CH, Chapel Hill, North Carolina, 27599-4100, 919.962.7761. If you have any questions, you may email: cheer1@asheboro.com or bday1@email.unc.edu.

*Thank you, in advance, for helping with this important research study!
We can't wait to hear what you have to say.*

Kindest regards,

Teresa M Petty
10444 Randleman Road
Randleman, NC 27317
(336) 498-9712

Dr. Barbara Day
UNC-Chapel Hill
307 Peabody Hall CB #3500
Chapel Hill, NC 27599-3500
(919) 966.3291

Appendix D – Consent for Individual Telephone Interview

May 15, 2002

Dear North Carolina Certified Teacher,

I am writing to thank you for your assistance with a research project to study the wants and needs of teachers, their perceptions about personal characteristics and their perception of the teaching career cycle. I am conducting this study as part of my doctoral dissertation. Your survey has been received and interviews (focus group and individual) will be conducted in the summer of 2002. I will call you to schedule a time convenient for you to participate in an individual telephone interview.

You are one of twenty certified teachers surveyed in North Carolina, randomly selected from those who checked the box on the end of the survey. Your responses to the personal interview or focus group questions will give a teacher's voice to our research findings.

Please sign both letters, keep one copy for your files and return the other letter in the enclosed envelope. By signing you are giving me your permission to use your answers to the interview questions in my study. There are no detrimental consequences if you choose not to participate in this study. In recording and reporting my findings, your identity will remain totally confidential. The questions will inquire only about your wants and needs as a teacher, attributes of a teacher and the teaching career cycle.

Participation is voluntary and you may withdraw from participation at any time with no detrimental consequences for choosing not to participate or for discontinuing participation. This in-depth interview or focus group interview will involve about 30 minutes of your time and I will mail you a written member check sheet to verify that I transcribed your answers correctly. I know this is a busy time for teachers and I appreciate your willingness to respond!

I look forward to receiving your response. Please feel free to call or email me with any questions you may have. Thank you for your time.

Sincerely,

Teresa M. Petty
10444 Randleman Road
Randleman, NC 27317
Home 336.498.9712
Email: cheer1@asheboro.com

Dr. Barbara Day
UNC-Chapel Hill
307 Peabody Hall CB #3500
Chapel Hill, NC 27599-3500
919.966.3291

You may contact the UNC-CH Academic Affairs Institutional Review Board at the following address or telephone number at any time during this study if you have questions or concerns about your rights as a research participant.

Academic Affairs Institutional Review Board
919.962.7761
email: aa-irb@unc.edu

Signature_____Phone#_____

Most convenient time to call_____

Appendix E – Interview Script and Reference for Script

Interview Script

1. Introduction: Teresa Petty, Doctoral Student at UNC
 - Research on What NC Teachers Want and Need to Be Successful and Satisfied in Their Profession
 - Previously filled out a survey and checked the box agreeing to be interviewed
 - Filled out an interview request and agreement form with phone number and time to call
 - Absolute confidentiality, no names or addresses will be used in reporting the finding of the research
 - Benefits: Hope to add to the growing body of research that is looking at the daily issues teachers face in 2002 and improve the profession so that more qualified people will choose to remain on the job throughout their careers. Also hope to look for possible benefits of advanced certification.
2. Background
 - a) No Name. Please refer to as Mr. X or Ms. Y.
 - b) Job Title or Role
 - c) Thumbnail sketch, age, gender, years teaching experience, subject(s)
 - d) How long have you been at this school?
 - e) Certification(s)
3. Your School
 - a) What geographical region is your school located in?
 - b) Is your school located in a rural, suburban, or urban setting?
 - c) Give 3 or 4 adjectives to describe your school.
 - d) Give 3 or 4 adjectives to describe the administration of your school.
 - e) What are 1 or 2 things an administrator could do to support your best teaching?
 - f) What are 1 or 2 professional development activities that would or have improved your performance in the classroom?
 - g) What are 1 or 2 factors that could cause you to leave teaching?
 - h) What are 1 or 2 factors that could cause you to stay in teaching?
4. Certification
 - a) How has/would advanced certification (NBCT, Masters, Doctorate) contributed to your success and satisfaction on the job?
 - b) What have you learned about yourself while pursuing advanced certification?
 - c) How has your years of experience contributed to your job success or satisfaction?
5. Professional and Personal Characteristics
 - a) What professional or personal characteristics make you a successful teacher?

- b) What could be done to keep you from burning out in the classroom?**
- c) What could be done at any or all levels of education to make you more satisfied and successful in the classroom?**

References for Script

Appendix F – IRB Proposal

Institutional Review Board Proposal

Identifying the Wants and Needs of North Carolina Teachers for Job Success and Satisfaction

Teresa McPherson Petty – Doctoral Student

Dr. Barbara Day– Faculty Advisor

1. **Project Description:** This project will examine the wants and needs of National Board Certified Teachers and non-National Board Certified Teachers in various stages of the professional career cycle. Three hundred and forty-eight high school mathematics teachers from North Carolina's three geographic regions will be the surveyed population. Commonalities in characteristics and perceptions concerning job success and satisfaction will be examined.

Research Questions:

- a. Is there a difference in the perceptions of high school mathematics NBCTs and non-NBCTs concerning the factors that significantly contribute to job success?
- b. Is there a difference in the perceptions of high school mathematics NBCTs and non-NBCTs concerning the factors that significantly contribute to job satisfaction?
- c. Is there a difference in the professional characteristics of high school mathematics NBCTs and non-NBCTs?
- d. Is there a difference in where high school mathematics NBCT's and non-NBCTs place themselves on the career cycle?
- e. Are there other factors such as location or region of the state, age, race, sex, years teaching, or educational level that affect wants and needs for successful high school mathematics teaching?

Research Assumptions and Limitations

- a. That 348 teachers statistically represent the teaching population of North Carolina.
- b. That National Board Certified status denotes exemplary performance on a standards-based assessment of performance.
- c. That the survey asks the important and correct questions those teachers need to answer.
- c. That non-National Board Certified Teacher status does not indicate poor or sub-standard teaching performance.
- d. That National Board Certified Teachers, by virtue of their reflective nature and the extensive nature of the certification process, may have a different set of wants and needs to be successful.
- e. That this study focuses on a narrow range of teachers, grades 9-12, who teach mathematics.

- f. That respondents will understand and correctly interpret the questions and will honestly answer the questions on the survey.
- g. That the survey is reliable in that the quality of the results has consistency over time and is valid in that it accurately determines what it was designed to determine.
- h. That the author's status as a National Board Certified Teacher will not affect the interpretation of the results.

The participants will be randomly selected from lists of Adolescence and Young Adult Mathematics, National Board Certified teachers supplied by the National Board for Profession Teaching Standards and lists of non-Board Certified high school mathematics teachers supplied by North Carolina Department of Public Instruction. These participants will be mailed an introductory letter, questionnaire and follow up reminders as needed.

A second group of participants will be randomly selected for focus group or individual interviews, preferably in person or over the telephone to triangulate the data and add richness to the findings from the survey.

Confidentiality will be maintained at all times. Though not anonymous, numbers on the surveys will be used for tracking purposes only. Participation will be on a voluntary basis only and teachers will be free to withdraw from the focus group discussions or interviews at any time with no repercussions.

2. **Participants:** There are currently one hundred seventy-four National Board Certified teachers in the area of high school mathematics in North Carolina. All of these teachers will be mailed a survey. An additional set of one hundred seventy-four teachers will be randomly selected from the list of certified teachers in North Carolina that are not board certified. Participation is voluntary and recruitment will occur via mailing the introductory letter, followed in a week by the survey, return envelope, post card soliciting focus group participants and cover letter. Non-respondents will be contacted in two weeks with follow up reminders and incentives.

3. The participants are not at risk and will not be harmed or placed in danger at any time.
4. Does not apply.
5. There are no illegal activities.
6. There is no deception involved.
7. The anticipated benefits to the participants and to society are that the factors identified as being significant wants and needs for job success and satisfaction in the teaching profession need to be identified for schools, districts and the state. Perceptions concerning the importance of professional

standards of excellence are important for the profession to know as it is faced with growing social and economic changes. Recommendations for re-igniting burned out veteran teachers may improve an entire segment of the profession at little cost. Knowledge of the career cycle and the characteristics of outstanding teachers may influence hiring and retaining more professional, reflective practitioners.

8. Prior consent is not necessary in this type of survey. Actual response to the survey will imply consent to participate.
9. This survey will not be totally anonymous in that they will be coded with numbers that will be used for tracking purposes only. If a response is not received in three weeks after the first mailing, a reminder with an incentive of one dollar will be sent to motivate response.

Attached:

Introductory Letter

Cover Letter

Survey

Interview questions for Focus Group and Individual Interviews

Appendix G – Grant Proposal

Narrative

(a) The research question(s) and its significance

3. Administrative Support:

- d. What are the most important administrative support needs of teachers?
- e. To what degree are administrative support needs related to the personal or professional characteristics of teachers?
- f. Are there differences in administrative support needs of National Board Certified teachers and non-Board Certified teachers?

4. Professional Development:

- d. What are the most important professional development needs of teachers?
- e. To what degree are professional development needs related to the personal or professional characteristics of teachers?
- f. Are there differences in the professional development needs of National Board Certified teachers and non-Board Certified teachers?

3. Are there differences in the perceived personal and professional characteristics of National Board Certified and non-National Board Certified Teachers?

4. Are there differences in where National Board Certified and non-National Board Certified Teachers place themselves on the career cycle?

**These research questions are significant because they look at the differences and commonalities between teachers who are National Board Certified and those who are not. The findings will identify what these two groups of teachers want and need

to be successful in the classroom. This is very important when looking at reasons why teachers leave the profession.

(b) A high quality review of the pertinent literature that provides a rationale for what is proposed

Teacher self-efficacy refers to Bandura's (1977) notion concerning the personal belief about one's ability to successfully perform a task. Self-efficacy is important in considering what teachers say they want and need to be successful since an important goal of the ILT process, mentoring programs, National Board Certification, and veteran renewal is strengthening the individual teacher's feeling of self confidence and personal competence. Teachers may want and need several of the factors on the survey as they see the need for improvement. There may be things they need to stay at the top of their game. The characteristics of individual educators may identify the type of person that continually reflects on what they are doing and how it affects students. The stage of an individual's career cycle may indicate their level of self-efficacy.

Numerous studies support Bandura's theoretical model and indicate a strong relationship between perceived self-efficacy and actual performance (Enderlin-Lampe, 1997). Patricia Ashton has devoted much time to this.

One important idea that increases teacher self-efficacy is shared decision-making in schools. Administrators make it possible for teachers to share in the decision-making in their schools. They either encourage teachers to have a voice or they discourage teachers from voicing their opinions. Teacher self-efficacy is a critical component in the restructuring of schooling, and teacher

attributes of self-efficacy are a major element in productive schooling (Enderlin-Lampe, 1997).

Therefore, it is very important for school systems, schools, and administrators to do support teachers and aid in increasing their self-efficacy.

Research conducted by Ashton and Webb in 1986 indicates that the motivation of teachers can greatly increase emotional rewards that teachers indicate are so satisfying yet so infrequent in the current system (Enderlin-Lampe, 1997). Research by Denham and Michael suggest that teachers frequently believe that they are not competent enough to have an integral part in shared governance (Enderlin-Lampe, 1997). Research by Ruscoe and Whitford in 1991 reported findings regarding teacher attitudes toward efficacy and empowerment and the learning environment in their schools. Their work indicated that teachers want to be involved in the restructuring of schooling (Enderlin-Lampe, 1997). Ruscoe and Whitford attribute an increase in sense of efficacy and more positive attitudes and work environment to the following: supportive administration, collegial faculty, and a major focus on students (Enderlin-Lampe, 1997). Therefore, it is important for administrators to empower their teachers, to let teachers know that their opinions are important, and to let teachers have a voice in decisions that affect them and their students. This is an administrative support need that is important to teachers.

Reflective practice has been identified with improving the quality of teachers and learning if it translates into self-efficacy and effectiveness. North Carolina Center for the Advancement of Teaching, NCCAT, was established in 1980 to serve as a place North Carolina teachers can go to for needed reflection and renewal.

Many of their seminars serve to remind teachers why they got into teaching in the first place. They seek to have teachers experience the Socratic method of truth seeking first hand, hoping that the process of seminar teaching will filter back to the classroom. NCCAT is a wonderful model for helping teachers identify what is important and what they want and need to be truly successful practitioners. The types of people that attend are the same types we as a profession want in front of our students. NCCAT is especially helpful to veterans who need to re-ignite their careers and renew their interest in the ever-evolving pedagogy therefore is an example of programs implemented to improve reflection, renewal, efficacy, effectiveness, job satisfaction and retention.

Because the professional is the receptacle of information concerning a given situation, the reflective process is essentially about increasing the professional's awareness of factors which influence the planning of her action (Bright, 1996). It is only by becoming aware of this information, and its quality and role in the design of her action, that the professional will realize alternative, and possibly better, ways of interpreting, interacting and dealing with problematic client situations (Bright, 1996). Again, this is a relative quality and means increased awareness relative to that, which already exists (Bright, 1996).

Reflective practice is very important in public schools today. Teachers need to constantly rethink their teaching practices. The life force of teaching practice is thinking and wondering (Hole, 1999). Teachers constantly think of moments of the

day that touch or puzzle them, and they question decisions that they made. During these times of reflection, they may realize when something needs to change.

(c) Description of the methodology and analytical techniques

The survey questionnaire, developed under Dr. Barbara Day at the University of North Carolina at Chapel Hill, will be administered to determine the differences between the wants and needs of high school mathematics teachers and National Board Certified teachers. This survey evolved from Dr. Day's doctoral class. For three years of seminars, doctoral students examined the content validity of this survey and performed several pilot surveys with small samples of teachers.

Cronbach's alpha reliability of the subscales with data from 417 participants ranged from 0.66 to 0.90. The subscale for job success and job satisfaction was 0.80. The subscale for the personal characteristics of the participants was 0.76.

Confidentiality was considered during the design of this study. The surveys will be coded. A number will be assigned to each potential respondent's name. These numbers will appear on the surveys in order to determine whom to contact for follow-up surveys. A question will appear at the end of the survey asking participants if they would be willing to provide additional information through focus group or telephone interviews. If they check yes, then their names and addresses will be used for further contact. This information will be obtained through the coding. If they respond no, then their names and addresses will not be used. Throughout the reporting of the findings, participants will not be called by their names to ensure confidentiality.

In an initial letter to the participants, the researcher will tell them who is conducting the study, why they were chosen to participate, and the time commitment. The researcher will explain the purpose of the study and what the researcher is hoping to learn through this survey questionnaire. The researcher will give contact information in case they have questions about the survey. The researcher will also remind them that participation is always voluntary. The researcher will explain the issue of confidentiality. The researcher will tell them that their names will not be used in the reporting of any findings. Potential participants will be contacted and given information about the study and the survey to follow. Participants will be selected from North Carolina in a randomly, stratified process, which includes teachers from the Mountains, Piedmont, and Coastal Plain. They will be given an email address and home phone number in order to send potential concerns or questions. A week later, the survey packet containing a cover letter and the actual survey questionnaire, will be mailed to the following three samples.

1. **Elementary School Sample:**
300 National Board Certified and 300 non-National Board Certified in the area of Middle Childhood Generalist
2. **Middle School Sample:**
300 National Board Certified and 300 non-National Board Certified in the area of Early Adolescent Generalist
3. **High School Sample:**
174 National Board Certified and 174 non-National Board Certified in the area of Adolescent and Young Adulthood Mathematics

Three weeks later, a follow-up survey will be mailed to the non-respondents. Two weeks later, data will be analyzed and individual in-depth interview questions will be developed. Prior to contacting the participants by telephone, a letter of consent will be mailed to the potential participants asking them to give their

permission to participate in the telephone interview, describing the nature of the interview, and asking them to indicate the best time and place to contact them.

These interviews will occur over a three-week time frame.

Procedures for Collecting Data	Time Frame
1. Contact potential participants with pre-survey information.	One Week
2. Mail survey packets to potential participants.	Three Weeks
3. Mail follow-up surveys to non-respondents.	Two Weeks
4. Analyze data from survey questionnaires.	Four Weeks
5. Contact potential participants for individual in-depth interviews.	Two Weeks
6. Conduct individual in-depth interviews.	Three Weeks
7. Analyze data received from these interviews.	Four Weeks

Data Analysis

Several methods will be used to determine any significant relationships between the data collected from National Board Certified mathematics teachers and high school mathematics teachers who are not Board Certified. The survey uses a Likert scale, which typically asks for the extent of agreement with an attitude item (Gall, et.al., 1996). The data obtained from this type of survey is of a categorical nature. The numbers used in the scale represent a category. For example, “5” = “Contributes Significantly”. To analyze the data collected from the survey questionnaire, Pearson’s Chi-Squared will be used. This statistical test compares a set of observed counts in categories with the expected counts in those categories (Ware, 2000). Pearson’s Chi-Squared also assesses the degree of association

between two categorical variables (Ware, 2000). This statistical test will determine whether or not to reject the null hypothesis. The null hypothesis for this study is that there is no significant difference between the attitudes of National Board Certified mathematics teachers and non-National Certified mathematics on various topics that make them successful and satisfied in their teaching career. Chi-squared tests will be performed on all items in the survey questionnaire that contain a Likert scale. These tests will identify patterns in teacher needs and wants as related to job success and satisfaction of National Board Certified mathematics teachers as compared with the control group of randomly selected high school mathematics teachers in North Carolina. A computer program, SPSS, will be used to assist in data analysis.

Data analysis of data collected from the focus group interviews will begin with organizing the data (Marshall & Rossman, 1999). The field notes and videotape notes will be organized thoroughly. The next step will be to generate categories, themes and patterns found in the data (Marshall & Rossman, 1999). The data will then be coded to allow for new understandings and emerging themes (Marshall & Rossman, 1999). Recurring themes and commonalties will be reported. Major differences between the two groups will also be reported.

Data analysis of data collected from the individual telephone interviews will be conducted in the same manner. However, notes from the researcher will be used as well as notes obtained from the audiotape of the interviews.

Triangulation will be used to corroborate evidence and illuminate themes found in the data (Rudestam & Newton, 2001). Triangulation refers to the soliciting

of data from multiple and different sources (Rudestam & Newton, 2001).

Triangulation helps to eliminate biases that might result from relying exclusively on any one data collection method (Gall, et.al., 1996). In this study, data is obtained from survey questionnaires, focus group interviews, and individual telephone interviews.

It is easy to see that education is in a state of change. Some of these changes are quite positive and are working to greatly improve the professional status of educators and improve the quality of teaching and learning in schools of the new millennium. Some of these changes present a difficult challenge for young people considering the added rigor of the still underpaid profession. School reform and restructuring are important issues as states grapple with improving the quality of education and educators while dealing with the economic realities that have become evident in the past year. The study of the factors that states, districts, and schools need to consider when hiring and retaining quality teachers may glean important insights for improvement and refinement of the nebulous process. Knowing the characteristics that identify exemplary educators may help employers choose new hires more carefully. Tapping the resources that are being wasted in burned out veterans may re-ignite an entire segment of the workforce without enormous additional funding.

(d) Importance of findings

We are currently faced with a great dilemma in the state of North Carolina. Teachers are leaving the profession at an increasing rate, and many qualified college students are choosing not to enter the profession for various reasons.

Currently new teachers are staying in the profession for an average of three years. Why are these teachers leaving the profession? Are their professional needs and wants being met? Why are they not satisfied with their current positions? What characteristics do teachers who are satisfied with their careers possess? The answers to these questions need to be found. They may give insight to the current teacher shortage.

This study will examine the wants and needs of teachers who are National Board Certified. These wants and needs will be compared to those teachers who are not National Board Certified. This study will also explore the professional needs and wants, the personal characteristics, and the careers cycles. These three attributes are looked at in terms of how teachers who are Nationally Certified and those who are non-Nationally Certified perceive themselves.

This study has both quantitative and qualitative components. The two groups of teachers will be selected from the three regions of North Carolina: the Mountains, the Piedmont, and the Coastal Plains. The quantitative data for this study will be obtained through a survey sent to Nationally Certified teachers and non-Nationally Certified teachers across North Carolina. This survey will be analyzed using Chi-Square. Similarities and differences between the two groups will be determined. The qualitative data for this study will be obtained in-depth individual interviews upon completion of the analysis of the surveys.

The purpose of this study is to determine what teachers want and need to be successful and satisfied in their profession. The study will look at the similarities and

differences of those teachers with National Board Certification and those without National Board Certification.

This study is very important to education in North Carolina and other states at this point in time. Currently, North Carolina faces a shortage of teachers. According to the Department of Public Instruction, a third of teachers leave the profession after the fifth year of teaching. We are also at a point when many teachers will soon be exiting the teaching profession due to retirement. This puts the state of North Carolina in a serious situation. Qualified teachers are becoming and will continue to be difficult to obtain and retain. This study will help the Department of Public Instruction to become aware of the wants and needs of teachers that make them successful and satisfied in the profession of teaching. Many other people will benefit from the results of this study. Administrators, parents, communities, students, Boards of Education, policy makers, and college professors will learn much about the wants and needs of high school mathematics teachers. They will learn about these teachers' feelings on teacher satisfaction, teacher success, administrative support, salary issues, classroom management issues, and many other issues that are of great importance to teachers.

This study will help provide information on teachers' wants and needs to be successful and satisfied in their careers that will help North Carolina and other states across the U.S. retain qualified, committed teachers.

(e) A dissemination plan for communicating the findings from the study to education community

We will send to the National Board for Professional Teaching Standards copies of our three dissertations and we will do a cross-dissertation analysis looking for significant commonalties and differences across grade levels. We would be willing to write an analysis of our findings for Accomplished Teacher. We would be willing to speak at conferences on our findings.

(f) Descriptions of relevant qualifications of proposed personnel commensurate with project responsibilities

The principal investigator, Teresa Petty, Diana Dagenhart, and Katie O'Connor are all doctoral students at the University of North Carolina at Chapel Hill. They are all National Board Certified. They have taken research classes at the university, which have given them the ability to carry out the stated research. They will also have at their disposal the expertise of the faculty in the school of education at the University of North Carolina at Chapel Hill.

(g) Letters of support from any partner or cooperating institutions and organizations

A letter is attached.

References

Bright, B. (1996). *Reflecting on 'reflective' practice*. *Studies in the Education of Adults*, 28 (1), 162-184.

Enderlin-Lampe, S. (1997). Shared decision making in schools: effect on teacher efficacy. Education, 118, (4), 150-160.

Gall, M., Borg, W., and Gall, J. (1996). Educational Research An Introduction. New York: Longman Publishers.

Hole, S. and McEntee, G. (1999). *Reflection is at the heat of practice*.
Educational Leadership, 56 (8), 34-37.

Marshall, C. and Rossman, G. (1999). Designing Qualitative Research (3rd
edition). Thousand Oaks: Sage Publications, Inc.

Rudestam, K. and Newton, R. (2001). Surviving Your Dissertation (2nd
edition). Thousand Oaks: Sage Publications, Inc.

Ware, W. (2000). EDFO 180: Class Packet.

Appendix H – Funding Agreement

Appendix I – Raw Data

References

- A. Bowers (personal communication, July 2002)
- Bright, B. (1996). *Reflecting on 'reflective' practice*. Studies in the Education of Adults, 28 (1), 162-184.
- Burroughs, R. (2001). *Composing standards and composing teachers, the problem of national board certification*. Journal of Teacher Education, 52 (3), 223-232.
- Claycomb, C. (2000). *High-quality urban school teachers what they need to enter and to remain in hard-to-staff schools*. The Quarterly Journal of the National Association of State Boards of Education, winter (1), 17-20.
- DeMaio, T. (1984) "Social Desirability and Survey Measurement: A Review." in Turner and Martin (eds.) *Surveying Subjective Phenomena, Vol. 2*. New York: Russell Sage.
- Dillman, D.A. (2000). *Mail and Internet Surveys: The Tailored Design Method (Second Edition)*. New York: Wiley.
- Driscoll, M. (2000). Psychology of Learning for Instruction (2nd edition). Boston: Allyn and Bacon.
- Ellis, T. (1984). Motivating Teachers for Excellence. (Report No. 400-83-0013). Washington, D.C.: National Institute on Education. (ERIC Reproduction Service No. ED259449).
- Enderlin-Lampe, S. (1997). Shared decision making in schools: effect on teacher efficacy. Education, 118, (4), 150-160.
- Gall, M., Borg, W., and Gall, J. (1996). Educational Research An Introduction. New York: Longman Publishers.

- Gawel, J. (1997). Herzberg's Theory of Motivation and Maslow's Hierarchy of Needs. (Report No. EDO-TM-97-01). Washington, D.C.: Office of Educational Research and Improvement. (ERIC Reproduction Service No. ED421486)
- Glasser, W. (1998). The Quality School Managing Students Without Coercion. HarperCollins Publishers: New York, N.Y.
- Glasser, W. (1998). The Quality School Teacher A Companion Volume to The Quality School. New York: HarperCollins Publishers.
- Hole, S. and McEntee, G. (1999). *Reflection is at the heat of practice*. Educational Leadership, 56 (8), 34-37.
<http://www.ccsso.org/intasc.html>
<http://www.nbpts.org>
- Ideas that work: mathematics professional development. (Report No. SE061246). Columbus, OH: Eisenhower National Clearinghouse for Mathematics and Science Education. (ERIC Document Reproduction No. ED417949).
- Keninger, F.N. (1986). Foundations of Behavioral Research. New York: Holt, Rinehart, and Winston.
- Latham, A. (1998). *Teacher satisfaction*. Educational Leadership, 55(5), 82-83.
- Lumsden, L. (1998). Teacher Morale. (Report No. EDO-EA-98-4). Washington, D.C.: Office of Educational Research and Improvement . (ERIC Reproduction Service No. ED422601)
- Ma, X. & MacMillan, R. (1999). *Influences of workplace conditions on teachers' job satisfaction*. Journal of Educational Research, 93(1), 39-50.

- Maeroff, G. The Empowerment of Teachers: Overcoming the Crisis of Confidence.
New York: Teachers College Press.
- Marshall, C. and Rossman, G. (1999). Designing Qualitative Research (3rd edition).
Thousand Oaks: Sage Publications, Inc.
- Meek, A. (1998). *Much to celebrate*. Educational Leadership, 55(5), 12-16.
- Miller, P. (1993). Theories of Developmental Psychology (3rd edition). New York:
W.H. Freeman and Company.
- Olivia, P. & Pawlas, G. (1999). Supervision for Today's Schools (5th edition). New
York: John Wiley & Sons, Inc.
- Reyes, P. (1990). Teachers and Their Workplace. Newbury Park: Sage
Publications, Inc.
- Richardson, V. (1994). Teacher Change and the Staff Development Process. New
York: Teachers College Press.
- Rudestam, K. and Newton, R. (2001). Surviving Your Dissertation (2nd edition).
Thousand Oaks: Sage Publications, Inc.
- Steffy, B., Wolfe, M., Pasch, S., and Enz, B. (2000). Life Cycle of the Career
Teacher. Thousand Oaks: Corwin Press, Inc.
- Ware, W. (2000). EDFO 180: Class Packet.
- Weasmer, J. & Woods, A. (1998). I think I can: the role of personal teaching
efficacy in bringing about change. The Clearing House, 71 (2), 245-247.
- Yee, S. (1990). Careers in the Classroom: When Teaching is More than
Job. New York: Teachers College Press.