WHAT MAKES PUBLIC SCHOOL TEACHERS STAY, LEAVE, OR BECOME NON-TEACHING EDUCATORS? AN IN-DEPTH UNDERSTANDING OF THEIR PERSONAL CHARACTERISTICS, BELIEFS AND PERCEPTIONS

by

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DEDICATION

I wish to thank my loving husband Mohan, my parents and in-laws who have always believed in me and my brother who once said that I was a long distance runner and wouldn't stop midway. Nana, it has taken 45 years for another Mittapalli in the family to get a PhD. This is for you!

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ABSTRACT

WHAT MAKES PUBLIC SCHOOL TEACHERS STAY, LEAVE OR BECOME NON-TEACHING EDUCATORS? AN IN-DEPTH UNDERSTANDING OF THEIR PERSONAL CHARACTERISTICS, BELIEFS AND PERCEPTIONS

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George Mason University, 2008

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The purpose of this study was to analyze public school teachers' personal characteristics, beliefs, and perceptions leading to their decision to either leave or stay in teaching. The study differentiated three groups of public school teachers—Leavers (who leave teaching entirely), Non-teaching educators (who take jobs within the education system), and Stayers (who remain in teaching) using the NCES dataset Baccalaureate and Beyond (B&B) 1993/2003. Low pay was considered one of the major reasons for leaving teaching by Leavers, while getting a job within education was the main reason for Non-teaching educators to leave teaching. Student's *t-tests* results suggested that higher ability individuals (with higher GPAs) were more likely to leave teaching. A majority of Leavers opened their own business/self-employed in addition to joining the non-education related business/private/professional industry. Among Non-teaching educators, school counseling was the major non-teaching position. ANOVAs were conducted to compare

various aspects of current job satisfaction among the three groups. Overall, compared to Leavers and Non-teaching educators, Stayers were more satisfied with their current job/position in several aspects of their current job such as— fringe benefits, challenge of work, further education. Finally, beliefs and perceptions regarding staying and being satisfied with teaching for the Stayers were analyzed using ANOVAs and decision tree prediction models. Stayers were likely to stay and be satisfied with their professions when they had autonomy running the classroom, student discipline and class size were not a problem, when they received support from parents and students had motivation to learn in class. Decision tree models showed that younger teachers were more likely to be satisfied than older teachers with student motivation and support from parents. The study findings are useful to inform researchers, policymakers and administrators to weigh in competing policies regarding issues of teacher turnover, attrition, and retention.

1. Introduction

Statement of the Study

Each year, over 150,000 public school teachers are hired to replace teachers who have either left teaching or retired to fill new positions in school districts across the country (Hussar, 1999). Based on analysis of the National Center for Education Statistics for the 1999-2000 school year, it is estimated that almost a third of America's teachers leave the field sometime during their first three years of teaching, and almost half leave at five years (Ingersoll, 2001). This rate is even higher in low-income communities (Murphy et al., 2003), and rural areas (American Association of School Administrators, 1999). Furthermore, the attrition rate is as high as 60% for teachers who enter through "alternative" career pathways (Darling-Hammond et al., 2001).

The NCES dataset Schools and Staffing Survey (SASS) analysis indicated that between 1.7 and 2.7 million newly hired teachers will be needed by the 2008-09 school year (Hussar, 1999). A separate analysis by Wayne (2000) produced similar estimates which indicated that there would be a two to three percent increase per year in the number of teachers needed over the next decade mainly due to increased student enrolments and/or retirements. Both Hussar and Wayne suggest there is and will be a

national need of approximately 200,000 new teachers each year for the foreseeable future.

The problem of teacher shortages across the nation puts added pressure on the school districts to replenish the supply of those teachers who may retire soon. As a group, elementary and secondary teachers are significantly older than the general labor force. The median age of public school teachers in 1993–94 was 44 years compared with a median age of 38 years for all workers in October, 1993 (Hussar, 1999). As a result, an unusually large need for newly hired teachers is expected, both to replace teachers as they retire and to meet the needs of increasing enrollments (Hussar, 1999). These newly hired teachers will include both people who are new to the profession and those who are returning to teaching after a hiatus away from the profession.

The exit of teachers from the profession and the movement of teachers to other schools are costly phenomena, both for the students, who lose the value of being taught by an experienced teacher, and to the schools and districts, which must recruit and train their replacements (Alliance for Excellent Education, 2005).

A conservative national estimate of the cost of replacing public school teachers who have left the profession entirely is $2.2 billion a year. If the cost of replacing public school teachers who transfer schools is added, the total reaches $4.9 billion every year. For individual states, cost estimates range from $8.5 million in North Dakota to half a billion dollars for a state like Texas (Alliance for Excellent Education, 2005).
The National Commission on Teaching and America's Future (NCTAF) places the cumulative costs for all schools and districts across the county—to hire, recruit, and train

the replacement teachers—at a staggering $7.34 billion (Barnes, Crowe & Schaefer, 2007). Milanowski and Odden (2007) comment that in addition to recruitment and hiring processing costs, we should add costs incurred due to lost productivity and human capital.

The 2000 Census indicated that of the total 6.2 million teachers in 2004, 71% are women. Of these, 17% of public elementary and secondary school teachers are under 30 years old and 51% are over 50 years. The highest degree attained by the teachers was a master's. By the end of the decade, the census bureau projects an increase in the number of elementary school teachers to grow by over 200,000 (U.S. Census, 2000). All of this is happening when 2.2 million more teachers are projected to be needed nationally over the next four years (Hussar, 1999).

Teachers' career choices reflect personal decisions and perceptions about the relative benefits of teaching versus working in other occupations. These benefits include compensation, as well as less tangible aspects such as working conditions and personal satisfaction. Intrinsic and extrinsic rewards, when combined with positive and negative working conditions, factor into college graduates' decisions to enter teaching, stay in teaching, and leave teaching (Johnson, Berg, and Donaldson, 2005). Additionally, teachers' individual career choices in the aggregate have implications for teacher supply and demand and educational policy. To the extent that high-quality teachers choose to enter and stay in the profession, schools will have fewer vacant teaching positions and a larger pool of qualified applicants to fill those positions.

As early as the 1980s, researchers began reporting on the impending teacher turnover and attrition crisis (Ingersoll, 1995). Due to the lack of sophisticated prediction models, it was difficult to forecast the problem easily, although, it was clear that teacher attrition would be a burgeoning issue in the coming years. The change in student enrollment, with an increase in numbers of minority and/or students of culturally and linguistically diverse background, a decrease in the number of college graduates, and an increase in teacher retirement plans drove the labor market trend predicted for the coming years. Eventually, as Ingersoll (1995) noted, there were fewer qualified teachers in the nation's classrooms.

Several research studies have identified a variety of reasons why teachers leave their profession entirely. These include personal reasons such as raising a family/taking care of family (Wayne, 2000; & Stinebrickner et al., 2003), salary and benefits (Darling-Hammond, 2003; Prince, 2002; Ingersoll, 1999; Ingersoll & Smith, 2002; Flowers, 2004 & Voke, 2003), poor working conditions (Hanushek, Kain & Rivkin, 2004), better job opportunities outside education for higher ability teachers (Podgursky, Monroe, & Watson, 2004), job dissatisfaction (Rhodes et al. 2004) related to students' behavior, teachers' lack of autonomy and general working conditions in school (Bess, 2003; Brunetti, 2001; Khmelkov, 2000; Losos, 2000 & Center for Teaching Quality, 2007), and stress (Perie & Baker, 1997; Woods & Weasmer, 2004), retirement (Provasnik & Dorfman, 2005), lack of support from school administration (Barnett & McCormick, 2004; Egley, 2003; Flowers, 2004; & Woods & Weasmer, 2004), increased student enrollment (Imazeki, 2005) and curricular, and professional development expectations

(Inman & Marlow, 2004). With all of this attention to turnover and attrition, it is easy to forget that, when compared to other professions, teaching remains one of the most stable employment choices a recent college graduate can make (Henke, Zahn, & Carroll, 2001) and is considered the most satisfying (MetLife Survey, 2006).

Interestingly, not all studies suggest that there is a teacher shortage in the nation. Some states do show low rates of teacher attrition (Bobbitt, 1991; Bobbitt, Whitener, & Lynch, 1994; Whitener at al, 1997) and many teachers are being hired from a reserve pool of former teachers (Kirby, Grissmer, Hudson, 1991). However, research at the national level using the national datasets has indicated that while certain areas of the country may have enough teachers, most states face significant challenges in hiring them (Murphy, DeArmond, & Guin,, 2003). Research conducted by the Alliance for Excellent Education (2005) showed varied rates of teacher attrition in the country. States such as Alaska, Rhode Island, Vermont Idaho, and Maine reported much lower rates of teacher attrition than the rest of the country.

Problems of Definitions

There is a wide variation over measurements of teachers leaving the profession. Most studies use the terms teacher turnover and attrition, rather than "leavers." Rollefson (1990) conducted a NCES survey in which he found that in 1987-88, the annual teacher attrition rate was 9% which included those teachers who moved to other teaching positions within or outside that school. According to Boe, Bobbit and Cook (1995), "teacher attrition" is a component of the more global term "teacher turnover" (i.e., changes in teacher profession status from year to year). The definition of teacher

turnover may include teachers exiting the profession, but may also include teachers who change fields (i.e., from special education to general education, from teaching to administrative position) or schools. Therefore, the rates of attrition cited commonly include teachers who are still employed in an education occupation. In addition, attrition is often reported for new or beginning teachers, who may have no prior teaching experience, or as many as five years. In my research, I focus on a more precise definition for public schools of teachers leaving the profession: "…The teachers who left teaching altogether—or "leavers"…." (Provasnik & Dorfman, 2005), and clearly state leavers' years of experience. In addition, a teacher who resigns from a school system or region should perhaps not be called a "leaver" because s/he might be re-hired in another school (i.e., mover), educational occupation or country (Macdonald, 1999). I will study this category of teachers and name them as "non-teaching educators" or those who leave teaching but take up other non-teaching, education-related job within the educational system.

No matter what the literature suggests about why teachers leave, teacher turnover and attrition pose major planning and policy challenges to teacher recruitment and retention efforts at all grade levels. Understanding the dynamics of such change in the teacher workforce is vital for policymakers weighing competing policies regarding issues of teacher shortages, teacher attrition, and teacher quality.

Purpose of the Study

Several research studies have identified a variety of reasons why teachers leave the profession entirely. These include but are not limited to—retirement, personal or family reasons, salary and benefits, lack of autonomy and support from the administration, school and classroom characteristics including students' behavior and lack of interest, and working conditions. However, a majority of them do not differentiate between teachers who left teaching entirely with those who took other non-teaching/administrative position within the school system. They are often lumped together as "leavers." Furthermore, fewer studies explain what specific occupations this group moves to and what are their beliefs and perceptions about their current/previous jobs.

The purpose of the dissertation is to first differentiate three categories of public school teachers—those who left teaching entirely ("leavers"), those who took up a non-teaching position within the educational system ("non-teaching educators") and those who continued to teach or remained in teaching ("stayers") and secondly analyze their personal characteristics, beliefs, and perceptions regarding their current job/positions.

Significance of the Study

This study aims to illuminate public school teachers' personal characteristics, beliefs, and perceptions related to their decisions to either leave or stay in teaching. It will explore if there are factors related to beliefs and perceptions unique to the three groups of public school teachers—leavers, non-teaching educators, and stayers, using a

national dataset, National Center of Education Statistics (NCES) Baccalaureate and Beyond (B&B) 1993/2003. The study findings are useful to inform researchers, policymakers and administrators to weigh in competing policies regarding issues of teacher shortages, teacher turnover, teacher attrition, and teacher quality.

Research Questions

The research questions in this study are:

RQ1. Are higher ability individuals more likely to stay in teaching?

RQ2. Are individuals with additional years of education past their Bachelor's degree more likely to stay in teaching?

RQ3. Among the seven components of current jobs of leavers, non-teaching educators, and stayers, is one higher than the other in its rating?

RQ4. Among the various components each for school/class characteristics, is one higher than the other in its rating for stayers to enable them to stay as well as be satisfied in teaching?

Definition of Terms

The following terms are defined for the purpose of this study.

Leavers. Those public school teachers who left the profession of teaching entirely (after five years of teaching experience).

Non-teaching educators. Those public school teachers who left the profession of teaching (after five years of teaching experience) in a public school to take up a non-teaching, or an administrative position in the educational system.

Stayers. Those public school teachers who continued teaching in schools.

2. Review of Literature

There is evidence that teacher attrition is one of the foremost problems in elementary-secondary education today, with an increasing student enrollment, an aging public teaching force and exiting of new entrants (Bacolod, 2007 & Ballou & Podgursky, 1997). The Bureau of Labor Statistics forecasted annual average job openings for elementary and secondary school teachers at approximately 400,000 per year between 1996 and 2006, for a total of approximately 4.5 million over a ten-year period of time. These teachers will be required to replace an estimated 765,000 teachers who will retire, leave or to keep the pupil-teacher ratio constant (Flowers, 2004). According to student enrollment statistics from the U.S. Department of Education, elementary and secondary school enrollments will set new records every year until 2007, with a record 52.5 million students expected to attend school by that time. States like California, Idaho, Arizona, Utah, New Mexico, Texas, and Georgia all expect enrollment increases of more than 10% over the next decade (Flowers, 2004).

There is ample empirical research evidence on the myriad of reasons why teachers leave, the propensity of those who may leave teaching after a few years, and the personal characteristics of those who are likely to leave or are planning to leave teaching in near future. However, there is a dearth of quantitative studies that compare the category of teachers who leave teaching entirely ("leavers") with those that take up non-teaching

positions within the education system ("non-teaching educators") and those who remain in teaching ("stayers"). Most of the studies do not differentiate leavers from non-teaching educators and tend to lump their findings together. Furthermore, fewer studies investigate where the non-teaching educators go after leaving teaching. Only a few qualitative studies have delved into the issues of beliefs and perceptions of leavers but their evidence is scattered and results are not generalizable to a larger population.

In this chapter, first I present research literature relevant to the proposed study. Specifically, I will cite those studies that have differentiated leavers from non-teaching educators and/or have investigated the jobs/professions the leavers and/or non-teaching educators go to after leaving teaching. Later, I summarize research surrounding the issue of teacher attrition based on some of the most commonly cited reasons why teachers leave their professions. The literature search and review have been limited to public school teachers. Effort has been made to include those studies that were published in the last 15 years, unless a study that was relevant to the current study in its nature and was published earlier and needed mention in the review.

Relevant Studies

Five quantitative studies were found that were related to the current study in that they investigated the professions former teachers ("leavers or non-teaching educators") went to that were non-teaching in nature after leaving teaching entirely, and studied the personal characteristics of leavers, stayers and movers. The studies varied in their sample sizes, and use of datasets. With the exception of one study that clearly demarcated

"leavers" from "non-teaching educators" and the jobs they took after leaving teaching, all of them investigated leavers, movers, and stayers. Movers are those teachers who take up another teaching position in the same/different school district. None of the studies investigated the three groups' personal characteristics, beliefs, and perceptions regarding their current/previous jobs and the jobs non-teaching educators took after leaving teaching together.

The most commonly cited reasons for leaving teaching by "leavers" were child care/pregnancy and retirement. "Movers" tended to move to another public school after leaving the previous public school. Both "movers" and stayers" believed that having a higher salary and improving the current benefits will motivate teachers to stay in their professions. The most common kind of jobs the "leavers" went to were private industry, and private business.

Harris and Associates conducted a poll of 1,602 former teachers as part of the first MetLife Survey of the American Teacher (1984-85). Among them, 500 took up other jobs outside of education. These included managerial positions (21%), professional specialties (20%), technical occupations (5%), and career sales (37%). These former teachers admitted that some benefits were better in teaching, but a majority felt these outweighed by advantages such as the professional prestige and intellectual challenge of their new positions. The survey did not investigate the non-teaching educators nor did it differentiate "leavers" from "non-teaching educators."

Bobbitt et al (1994) investigated the characteristics of leavers, movers, and stayers using data from the 1991-92 Teacher Follow up Survey (TFS), a follow up of the 1990-

91 SASS. The SASS was designed to provide a composite national snapshot of America's public and private schools using surveys of teacher, teacher demand and supply, principal/administrator questionnaire, and school questionnaire. It was first conducted by the U.S. Bureau of the Census during the 1987-88 school year, and again in 1991-92, and 1993-94. During the 1990-91 cycle, an Indian School Questionnaire was added and then in 1993-4 cycle, questionnaires on student records, library media center and library media specialist were also added. The TFS is a follow-up of selected teachers from the SASS. It is conducted in the school year following SASS (i.e., 1988-89, 1991-92, 1994-95). The sample consists of all interviewed SASS teachers who left teaching ("leavers"), who moved to another school ("movers") and those who remained in teaching ("stayers") within the year after SASS. The researchers defined "movers" as those who changed schools within/outside their districts. Using a sample of approximately 22,600 schools (public and private), and a response rate of 95%, they studied about 5,000 public school teachers who belonged to one of the three categories. Their findings suggested that in public schools, the attrition rate between the school years 1990-91 and 1991-92 was 5%. The rates of attrition did not vary by field (math and science or general education subjects such as English, reading, and social studies) but by age, with the rates in the under-30 age category 7.5% for public school teachers. Almost all public school teachers who moved to other schools moved to other public schools (94.3%). Those who left teaching cited reasons of staying home for younger children and retirements as the main reasons. Only about 0.7% of leavers cited poor salary as the main reason of leaving. Teachers who stayed in the same schools generally felt that higher

salaries or better fringe benefits would be the most effective step in encouraging teachers to remain in teaching.

Whitener et al. (1997) studied the characteristics of leavers, stayers and movers using the 1994-95 Teacher Follow-Up Survey (TFS). Similar to the 1991-92 TFS, about 5,000 public school teachers participated in the 1994-95 TFS and the sample consisted of public school teachers who either left, moved or continued to teach. The overall response rate of the survey was 91%. Several results of the 1994-95 TFS were similar to those of 1991-92 TFS. Teacher attrition varied by teacher's age. The attrition rate for teachers in the 25 to 29 age category was 10% and the rate for the 60 to 64 age category was about 31%. Among public school teachers, 6.6% left teaching within the year. The two main reasons cited by "leavers" were retirement (27%) and pregnancy/child-rearing (16%), followed by dissatisfaction with teaching as a career and student discipline problems (18%) and lack of administrative support (15%). Further, public school teachers who were "leavers" took jobs in the non-teaching related public or private industry, business, or individual for wages, salary, or commission. Among those public school teachers who transferred to another school, a vast majority of them (95.7%) moved to another public school.

Luekens et al. (2004) used the 2000-'01 TFS to investigate the current main occupational status of public school teachers who left their positions. Their final sample consisted of approximately 8,000 public and private school teachers who were either "leavers," "movers," or "stayers." Some of the major findings of their report were—between the 1999–2000 and 2000–01 school years, 85% of all public school teachers

remained at the same school, 8% moved to a different public school, and 7% left the teaching profession entirely. Public school teachers with fewer than 10 years of teaching experience were more likely than their more experienced colleagues to move to a different school between the 1999–2000 and 2000–01 school years. Public school teachers who were younger than age 30 were also more likely to move than older teachers. A higher proportion of public school teachers left the profession between the 1999–2000 and 2000–01 school years compared to the 1990–91 to 1991–92 and 1987–88 to 1988–89 school years. Among the reasons that public school teachers gave in 2000–01 for moving to a new school were an opportunity for a better teaching assignment (40%), dissatisfaction with support from administrators (38%), and dissatisfaction with workplace conditions (32%). Twenty-nine percent of public school leavers reported in 2000–01 that they left the teaching profession in order to retire and about 20% reported that they left to pursue another career and obtain a better salary or benefits. Among public school teachers who left the teaching profession between 1999–2000 and 2000–01, larger percentages of women than men cited pregnancy/child rearing and health as very important or extremely important reasons in their decision to leave teaching. Fifty-nine percent of public school "leavers" took up jobs in local, state, or federal government. "Leavers" who were working in a non-teaching position in 2000–01 were asked to compare their current position to their 1999–2000 teaching position on 17 occupational characteristics, like salary, intellectual challenge, availability of resources, and recognition and support from administrators or managers. On 15 of the 17 characteristics,

they indicated that they were better in their current position than in teaching, with the exception of benefits and job security.

Finally, Fowler and Mittapalli (2007) identified the category of public school non-teaching educators using the Baccalaureate and Beyond longitudinal study (93/2003). This study tracks the experiences of a cohort of recent college graduates those who received the baccalaureate degree during the 1992-93 academic year and were first interviewed as part of the National Postsecondary Student Aid Study (NPSAS). This group's experiences in the areas of academic enrollments, degree completions, employment, public service, and other adult decisions were followed for 12 years. With a sample size of 144 non-teaching educators, the researchers examined the verbatim descriptions of the "leavers" and "non-teaching educators" to differentiate between the two categories depending on the kinds of jobs/positions the "leavers" chose to go to after leaving teaching which were different from those of "leavers." Their findings indicated that among the non-teaching educators, 39% took employment within other education occupations, including non-teaching positions in school districts and higher education, 21% started their own business or worked in social organizations similar to public education and 12% acquired jobs in the state or the federal government. The researchers did not investigate the personal characteristics, beliefs and perceptions of non-teaching educators and nor did they compare them with those of the leavers and stayers. Furthermore, their research did not differentiate between full-time and part-time teachers/substitute teachers.

In summary, there is very scattered evidence about the group, non-teaching educators and their personal characteristics, beliefs and perceptions as compared to leavers and stayers. One study that did mention the non-teaching educators and their current positions did so with a very small sample and did not further compare this group's characteristics, beliefs and perceptions of current jobs with the other two.

Overall, these studies have contributed to my in-depth understanding of the topic and have enabled me to frame my study. First, I will differentiate non-teaching educators from the other two (leavers and stayers) and then examine all the three groups' personal characteristics, beliefs and perceptions about their current jobs. None of the aforementioned studies combine all these components in their investigations.

Overview of Literature on Teacher Attrition

An examination of literature on teacher attrition sheds light on various commonly cited reasons of why teachers leave teaching. As mentioned earlier, there is ample evidence of research on commonly occurring reasons of teacher attrition. These include but are not limited to— retirement, personal/family reasons, pay/compensation, working conditions, school and student characteristics, hard-to-staff subjects, teacher preparation and teacher ability. Research has been conducted using different types of data including local, state/district level, and national datasets. Given the scope of the proposed study, in the next few paragraphs, I review some studies that have used different datasets to research teacher attrition and have cited various reasons for teacher attrition.

In a B&B (93/03) study, Alt, Henke and Perry (2007) investigated 1992-93 bachelor's degree recipients' experience with K-12 teaching in the last 10 years. Their

descriptive analyses comprised 8,100 bachelor's degree recipients, representing about 1.2 million people who completed a bachelor's degree in 1992–93. The weighted overall response rate for the B&B: 93/03 interview was about 74%. They compared the graduates who chose to teach with those who didn't. Older females (30 years or above) were more likely to remain in teaching compared to their younger counterparts. Education majors were more likely to be teaching in 2003 compared to non-Education majors. Graduates whose SAT or ACT scores were in the lowest 25% of the distribution were teaching in 2003 compared to those with 10% in the middle half of the score distribution and 6% with the highest scores. In job satisfaction rates, the findings were very similar to their 2001 study. They found 2 out of 3 teachers to be planning to stay in teaching until retirement. In addition, males were more likely than females to express an interest to choose teaching again when asked. Some of the major reasons for leaving teaching were personal including taking care of children/family members (19%), taking jobs outside education (18%), or non-teaching jobs within education (15%) and higher pay (13%). About 7% respondents said they left teaching due to difficulty with students, and lack of administrative support. Males were more likely to take a job outside of education. Their analyses did not investigate the kinds of non-teaching jobs within education the "leavers" went to.

Compensation has been cited as the primary reason for teacher attrition in a handful of studies using state and district data. Murnane and Olsen (1989a) used a longitudinal dataset of 7,800 Michigan public school teachers and conducted a least squares estimation technique that accommodates time-varying covariates, and fixed

effects to demonstrate that salaries and opportunities cost influenced on how long teachers stay in teaching. Their analyses with the model estimated with a fixed effect showed that a $3,400 increment in salary (in 1987 dollars) was associated with an increase in median teaching spell duration of more than four years for the teachers. The salary coefficients in the model estimated without the fixed effects were approximately one-third smaller. A likely reason for the difference was that some school districts paid higher salaries to compensate for difficult working conditions.

Ingersoll and Smith (2003) used the 1993-94 SASS and 1994-95 TFS data to provide an estimate of the cumulative attrition of beginning teachers in their first few years of teaching. The sample size consisted of about 53,000 public school teachers in the U.S. The survey response rate was 88%. Their descriptive data analyses suggested that after just four-five years of teaching, between 40 and 50% of all beginning teachers left the profession. They further found that about 19% of these beginners who left teaching said that they did so as a result of a school staffing action, such as a cutback, layoff, termination, school reorganization, or school closing. Another 42% cited personal reasons, including pregnancy, child rearing, health problems, and family moves. Around 39% said that they left to pursue a better job or another career, and about 29% said that dissatisfaction with teaching as a career or with their specific job was a main reason. The survey asked the 29% who listed job dissatisfaction as a major reason for leaving about the source of their dissatisfaction. More than 75% of those who left teaching entirely attributed it to low salaries. But even more of them indicated that one of four different school working conditions was behind their decision to quit: student discipline problems;

lack of support from the school administration; poor student motivation; and lack of teacher influence over Schoolwide and classroom decision making.

Ondrich, Pas, & Yinger (2005) investigated the impact of teacher and job characteristics on teacher attrition in upstate New York using two datasets collected by the New York State Education Department, the *Personnel Master File* (PMF) with teacher personal characteristics and the *Institutional Master File* (IMF) with school and student data. Their sample size was about 15,000 public school teachers where a majority of them were females (73%). The data are collected using annual surveys. Based on discreet-time hazard model that allows for censored data, time varying covariates, and duration dependence, they concluded that the majority of teacher attrition is caused by the attractiveness of higher-paying alternative occupations outside education, a tenured teacher was less likely to leave districts with a relatively high salary scale and finally, teachers wee more likely to leave a district with a relatively high concentration of disadvantaged students.

A particular concern of researchers has been teacher attrition in large urban school districts and socially disadvantaged schools (Lankford, Loeb, & Wyckoff, 2002; Hanushek, E., Kain, J., & Rivkin, S., 2004). In New York City public schools, transfer and quit behavior was found to be consistent with the fact that more qualified teachers seized opportunities to leave difficult working conditions and moved to more appealing environments. In their study, Lankford, Loeb, and Wyckoff (2002) used the *Personnel Master File* (PMF) data from the New York State Education Department with a sample size of approximately 15,000 public school teachers. They found that teachers were more

likely to leave poor, urban schools (38% compared to 46% in suburban schools after five years of teaching). For instance, Yonkers, Rochester, and Syracuse white students attended schools with teachers .20 to .35 standard deviations higher in skills than non-white students and non-poor students attended schools with teachers with .20 to .27 standard deviations higher in skills than poor students). Further, those who left teaching were likely to have greater skills than those who stayed (e.g., 21% of nonwhite students had teachers who were not certified in any subject, compared to 15% of white students. Twenty-six percent of nonwhite students had teachers who failed either the General Knowledge or Liberal Arts and Science certification exam, compared to 16% of white students). In most instances, teachers of nonwhite, poor, or low-achieving students receive roughly the same starting salaries, as did teachers of white, non-poor, and non-low-achieving students with an exception of Utica-Rome and Syracuse regions of the state where the differences were as higher as $2,800. In addition, salary variations did not compensate for the apparent difficulties of teaching in urban school settings and in some cases contributed to the inequities in teacher resources across schools (Lankford, Loeb, & Wyckoff, 2002).

Poor teacher working conditions have been found to be an attributing factor of teacher attrition. In a study using data of Palm Beach County, Florida, Linker (1992) determined if there were differences in opinions on aspects of teaching related to teacher attrition in three groups of teachers that she classified as departers (those teachers who planned to leave teaching within five years 16%), undecideds (those teachers who were undecided about leaving (37%), and remainers (those who planned to stay in teaching

47%). Her sample consisted of 256 public school teachers who filled out a paper-based survey questionnaire derived from the SASS 1987-88 and TFS 1988-89 asking them about their personal characteristics and satisfaction with aspects of teaching, attitudes toward teaching, and suggestions for increasing retention in the county schools. Based on ANOVA and chi-squared analyses, her findings indicated significant differences ($p<.05$) among the three groups with respect to having previously considered leaving teaching ($\chi^2=16.38$, n=234, df=2, $p<.001$) and being dissatisfied with teaching as a career ($\chi^2=23.68$, n=214, df=2, $p<.001$) and general working conditions ($F_{2,232}=6.69$, $p<.01$), learning environment ($F_{2,232} = 6.06$, $p<.01$), support from the administration ($F_{2,232} = 1.88$, $p<.01$) , and parental support ($F_{2,227} =6.90$, $p<.01$) , student behavior ($F_{2,234}=3.78$, $p<.05$). The departers were significantly different from undecided and/or remainers regarding school and student characteristics including support from administration ($F_{2, 216} = 5.29$, $p<.01$). Although 61% of the departers and 55% of the undecided had negative attitudes on this issue, only 39% of the remainers were negative. The remainers were more satisfied with all the questionnaire items related to attrition than the other two groups. Increasing salaries and giving them support in the classroom were suggested as the most effective steps for decreasing attrition.

Marvel et al (2006) used the 2002-03 SASS to investigate the status of leavers, movers and stayers. Using descriptive statistics, they found that of the 8,000 public school teacher respondents, 2,864 (84%) were still teaching at the same school in 2004–05 as in the previous year (“stayers”); 1,912 (8%) were still teaching in 2004–05, but at a different school than in the previous year (“movers”); and 2,653 (8%) had left the

teaching profession in the previous year ("leavers"). Fifteen percent of teachers who were younger than 30 years left public schools. Those public school teachers who left teaching to take jobs within the education system (i.e., they became non-teaching educators) felt that they had more control over their own work in this position. Fifty-five percent of those teachers who took jobs outside the education system felt that their workload in the new position was better and they were able to balance their family and work lives better (Marvel et al. 2006).

Bacolod (2007) used B&B (1997) to investigate the determinants of entry of college graduates into the teaching profession and their distribution across urban, suburban, and rural schools. Based on a nested logit model, her findings suggested that of the 10,569 college graduates in the sample, 12% had taught by 1997. Women constituted 73% of those who had taught or were currently teaching. There was an uneven distribution of teachers—female teachers were concentrated in central city schools and the suburbs (66% compared to 47% males). There were gender differences in teacher abilities as well—fifty-four percent of male teachers came from the top two SAT quartiles, compared to 37% of female teachers. Also, compared to wages, working conditions played a more important role in the decision-making process of the teachers who chose to teach in one of the locales for teaching. Wages however, played a relatively more important role at the entry level for both males and females. Descriptive analyses revealed that both men and women with degrees related to education were more likely to take up teaching compared to those with degrees in math, science, and engineering. Female minority teachers were more likely to choose urban schools than suburban

schools. Married female teachers were also more likely to teach in suburban schools. College graduates with higher aptitude were less like to teach and those who did choose to teach chose suburban schools (Bacolod, 2007).

In a literature review of teacher recruitment and retention, researchers Guarino et al (2006) examined the characteristics of individuals who enter, remain and leave teaching and characteristics of schools and districts that successfully recruit and retain teachers, and the types of policies (including compensation, pre-service, in-service) that show evidence of efficacy in recruiting and retaining teachers. Based on a conceptual framework of labor force supply and demand, related to teacher attrition rates, the researchers found evidence that schools with fairly higher proportions of minority, low-income, and poorly-performing students tended to have higher teacher attrition rates. The low-performing schools also tended to have more beginning teachers whose rate of attrition was higher than those who were more experienced. Urban schools had higher teacher attrition rates than suburban and rural districts, which were found to be consistent with other earlier studies. Researchers also hypothesized that teachers with greater academic ability will have better job opportunities outside of teaching and some have found that teachers with higher test scores leave teaching completely sooner than others (Guarino et al., 2006).

Hanushek, Kain, and Rivkin (2004) analyzed data on more than 300,000 Texas teachers during 1993-1996 to construct empirical salary schedule for the first ten years of experience for each school district within the state. Their data suggested that 82% of teachers remained in the same school, while 7% exited, 6.5% moved within districts and

5% switched districts each year. The researchers found that school characteristics (particularly race and achievement) rather than teacher salary played a larger role in influencing teacher attrition. Salary did exert a modest impact once compensating differentials were taken into account. Schools serving low-achieving students and greater proportions of minority students had greater problems retaining than high-achieving, low-minority schools. The reason was that the (majority) white teachers tended to move to schools with non-minority, higher-income students. African-American teachers were known to move into schools with higher African American students than the schools they were previously employed. Hanushek et al. also found that those teachers who left Texas public schools were generally either young teachers in their first 2 years of teaching or very experienced teachers nearing retirement eligibility.

A study conducted by Tompkins (1995) used the 1990-91 SASS and 1992 TFS to investigate the multi-dimensional concept of teacher burnout. As defined by Byrne (1994a), burnout is a condition where individuals as a result of job- related stress become physically, emotionally, and mentally exhausted, thereby losing the ability to function effectively in their jobs (as cited in Tompkins, 1995). She investigated the relationship between teachers' attitudes and perceptions (e.g., student behavior, administrative support, working conditions, school policies, feelings of being a teacher, etc) leading to teacher attrition. Based on a weighted sample size of 2,553,457 for public and 353,850 for private school teachers, her factor analyses results indicated that teachers' attitudes and perceptions combined with their school demographic characteristics influenced the decisions of teachers who left teaching from those who stayed. These attitudes included:

their overall attitude toward the teaching profession, their perception of administrative support and cooperation among the staff, and their perception of classroom autonomy.

The turnover problem, although high for the entire teaching occupation, affects beginning teachers more than others. Teaching has lost and continues to lose many of its newly trained members early in their careers, long before their retirement (Lortie, 1975; Murnane, Singer, Willett, Kemple, & Olsen, 1991).

Special education began to see the trend of increasing teacher attrition in the later 1980s. During this time, the demand for special education teachers was 29,000 per year—this was almost double the annual production of graduate and undergraduate teacher preparation programs (Boe, Cook, Bobbitt, & Terhanian, 1998). Researchers have found that in-service special education teachers were twice as likely to leave their field as are general educators (Boe, Bobbitt, Cook, & Barkanic, 1998; Carlson, Brauen, Lee, & Willig, 2002). They also found that special educators transferred to general education at the rate of 8.8% while general educators at 1%. Some of the most common reasons cited for their exit were working conditions such as stress at work, paper work, lack of peer support and caseload; inadequate financial rewards; lack of professional commitment; and lack of professional certification to teach.

Not all studies have portrayed a grim picture of teacher attrition. Based on the U.S. Census data on job satisfaction and/or general happiness, the Chicago-based NORC's General Social Survey (GSS) found that the most satisfying jobs are mostly involving caring for, teaching, and protecting others and creative pursuits. Heading the list were the clergy, second were physical therapists and other healing professions, third

were firefighters and fourth on the list were three educational occupations—educational administrators (e.g., deans, principals, and superintendents), general education teachers and special education teachers (NORC, 2007).

Similarly, in the 2006 released MetLife Survey of the American Teacher: Expectations and Experiences, the overall rates of teacher job satisfaction were at 20-year high. Despite challenges of lack of time for planning and grading (65%), helping individual students (60%) or classroom instruction (34%), they found that 56% of the teachers were very satisfied with teaching as a career, a 70% increase over findings reported in the 1986 MetLife Survey of the American Teacher: Restructuring the Teaching Profession.

Using the data from the 1997 follow-up of the Baccalaureate and Beyond Longitudinal Study (B&B: 93/97), Henke, Zahn, & Carroll (2001) examined whether 1994 bachelor's degree recipients who taught at the elementary/secondary level were more or less likely to work in the same occupation in 1997 when compared with peers in other occupations. Using descriptive analyses, they found that K–12 teachers among 1994 college graduates were among the least likely to work in different occupations in 1997. Teachers who stayed in teaching considered it their profession, and tended to be more satisfied despite receiving lower compensation and fewer benefits compared to other professions.

In another B&B study using 1994 and 1997 data (Henke & Zahn, 2006) results indicated that there was no difference between teachers who majored in education and those who majored in engineering, science, or related fields. Among the K-12 teachers in

1994 who remained in teaching in 1997, 70% of them had majored in engineering, science, or related fields, compared with 86% with education majors. The study also found that those college graduates who joined teaching soon after graduation appeared to be more stable in their choice of occupations.

To summarize, there is ample research from quantitative studies with different datasets/samples on teacher turnover and attrition that have looked into the varied reasons why teachers leave entirely ("leavers") or move ("movers") upon leaving teaching. Some of them have contrasting findings stating that the teaching profession is one of the most stable ones over a period of time; while others lament that the education system has and will continue to lose high-quality teachers if policies are not directed at the correct reasons for the attrition. The jury still seems to be out on what can be done to retain teachers at all levels. Through my study, I will examine the jobs/positions the teachers go to ("leavers" and "non-teaching educators") when they leave teaching and further analyze the beliefs and perceptions of leavers, non-teaching educators and stayers.

Qualitative Studies

There are fewer qualitative studies on teacher turnover and attrition. The ones that investigated the issue of teacher attrition cited working conditions and pay as the primary reasons for leaving teaching.

One of the greatest strengths of qualitative research is its capacity to identify the unexpected and shed light on the odd (Hargreaves, 1994). Qualitative research provides a way to know the *why* of a study, rather than only the *how*. It is focused on the collective and subjective nature of the data. John W. Creswell (1998) defines qualitative inquiry as

"research in a natural setting where the researcher is an instrument of data collection who gathers words or pictures, analyzes them inductively, focuses on the meaning of participants, and describes a process that is expressive and persuasive in language" (p. 14).

One of the well-documented qualitative studies on teacher attrition was conducted by Huberman (1993) on Swiss secondary teachers to understand their career trajectories. The findings suggested that teachers were less likely to decide to leave teaching when they received support from other staff and administrators (Huberman, 1989, 1995). The main lesson learned from this study is that teachers' careers are not only shaped by the place they work but also the context in which they work and the personal relationships they maintain within that organization (Kuhlmann-Sedivy, 2006).

Howard Becker's (1970) study on the careers of Chicago-based teachers was a pioneer in extrapolating the *horizontal* career movement of the teachers rather than the *vertical* one in which the mobility from one school to another "is accomplished primarily through the manipulation of formal procedures" (p. 168) in order to move from the less desirable school to a "right" one (p.170). Becker explains the process as the one in which a new teacher is always initially placed in a school with several academic and student disciplinary problems. The teacher applies to other "good" schools in the neighborhood after collecting intelligence of the desirable school and waits for her transfer after teaching for at least one year when a position becomes vacant. Second, her transfer is also contingent upon her race/ethnicity and her relationship with the principal of her school where her transfer may get rejected informally. At the same time, these teachers

become more integrated in the system; develop social relations in such a way as to ease the problems associated with the less desirable schools. She is accepted as a trustworthy colleague and is able to maintain her position of power vis-à-vis students and principal.

Qualitative research methodologies such as phenomenology helps to account one's lived experience (Burch, 1989) and self-study enable the uncovering, critiquing, and re-telling of important aspects of teaching profession and seeks to establish an even deeper understanding of their implications regarding teacher attrition (LaBoskey, 2004). The constant inquiring, questioning, and searching attitude may prove to be helpful in gaining an insight into the complex world of teaching (Gambrell, 2006). Self-study provokes, challenges, and illuminates rather than confirms (Bullough & Pinnegar, 2001).

Using a narrative research approach and a self-study methodology (Samaras et al., 2004; Coles & Knowles, 2000) based on images, journaling, and self-refection, Sarah Gambrell (2006) tells her personal story of reasons for leaving teaching after three-years in an Ontario, Canada based elementary school. She specifically seeks to "understand her perceptions, beliefs and personal accounts of the day-to-day experiences, personalized through the eyes and voice of a teacher…by framing three images and accompanying themes of her decision-making process—*Reaching*, *The Journey*, and *Finding a Path* (emphasis in original)" (p. 57). The *Reaching* phase comprised a range of tensions experienced in the process of becoming educated, school characteristics such as support rendered by the administration, grading and accountability, school culture, working conditions, and teacher commitment. The *Journey* covered her inner beliefs on intellect, emotion, motivation and morale, effective communication, professional and career

development, leadership and collaboration. While *Finding a Path* was represented by taking action, reflecting and future plans and hopes.

Another such study by Heider (2006) traces the decision-making processes of 13 teachers who leave teaching. Based on personal interviews, a survey questionnaire and concept maps drawn by the former teachers, she concludes that the main reason a majority of her respondents left their profession was due to the rigidity of public education system. Her respondents' lack of autonomy, support and respect from the administration, parents and students and overall working condition contributed to their overall job dissatisfaction and their eventual decision to leave teaching. In addition, some other areas of dissatisfaction were also cited: being called upon to teach outside their certification area, experiencing a strong focus on athletics rather than academics, isolation from peers, and dealing with inclusion of special education students in the regular education classroom. Five out of the 13 respondents cited low salary as a contributing factor to their decision making process. One of them was moonlighting at two additional jobs to supplement her school income. While some of the respondents moved to other schools within the district, two decided to become stay-at-home mothers to take care of their young children. One of them was working on her doctoral degree at the time of the study; another took up a job as an assistant professor at a university and another as an instructor at another university. As one of them expressed in one of her interviews after leaving her job as a teacher, "I feel like a professional. I never felt like that way before. I'm actually valued and respected for the work that I do" (as cited in Heider, 2006, p. 114). Among all of them, four of them said they planned to return to

teaching after some time but didn't regret leaving teaching at that time. Interestingly, the respondents expressed going through decisional conflict stress and coping mechanisms as explained by Janis and Mann's (1977) Five Stages of Decision Making (as cited in Heider, 2006). These stages include—unconflicted inertia, unconflicted change, defensive avoidance, hypervigilance, and vigilance (as cited in Heider, 2006, p. 150).

A mixed-method study examined the various characteristics of attrition among new and beginning teachers in a small Midwestern suburban/urban school district (Williams, 2005). The researcher used surveys to record the responses of teachers and principals to study the organizational culture of the school they were employed in and its influence in teachers' decision of leaving teaching. Low salaries topped the reasons, followed by an unresponsive central office, lack of parental support, negative student attitudes, increased paperwork, lack of appreciation for their work, low professional status, and high accountability were cited as the reasons for leaving.

In summary, the qualitative studies have provided useful insights on the *why* aspects of teacher attrition. Most of them have cited working conditions as the primary reason for teacher attrition. Although, each study was framed under a different context and varied in the number of cases being investigated, they have informed my study in choosing those variables that will shed light on the 'beliefs' and 'perceptions' of the current jobs/positions of the three groups. Although, very limited in providing any narrative description, my dataset will attempt to understand what enables the stayers to stay and be satisfied in teaching.

Summary

The studies on teacher attrition reviewed above are remarkably wide spread in accounting for the reasons why public school teachers leave teaching entirely. The main reasons found were—retirement, personal/family reasons and child rearing, working conditions, school and student characteristics, and hard-to-staff subjects among others. There is a wide variation in measurement methods, datasets and results. A majority of the studies do not differentiate between leavers, and non-teaching educators, rather they are lumped as "leavers." Some of them have identified leavers, movers and stayers. Those studies that identified the group "non-teaching educators" did not investigate the beliefs and perceptions of this group regarding teaching and their current jobs that took them apart from the "leavers" and "stayers." Furthermore, the reviewed studies did not separate public from private and full-time from part-time/substitute schools teachers. The qualitative studies that were much fewer in number did not delve into the beliefs and perceptions of the "leavers" or "stayers." Additionally, little or no research has been conducted to investigate the occupations the non-teaching educators take up after leaving teaching. This study identifies and compares the "non-teaching educators" with "leavers" and "stayers," examines the kinds of jobs they take up/ go to after leaving teaching and finally investigates the personal characteristics, beliefs and perceptions of all the three groups.

Conceptual Map

There is much research on the reasons why teachers leave their professions entirely. Most of it has been done by economists based on labor market demand and supply and/or academicians using surveys, local-district or state-level data. There are fewer studies using the NCES national datasets like SASS/TFS and B&B. Among the studies conducted using B&B, researchers have found that those graduates who became teachers upon graduation in 1993-94 and stayed on as teachers in 2003 reported to be more satisfied with their jobs compared to their counterparts in all other professions (Henke & Zahn, 2001). Although, they analyzed the personal characteristics of new teachers (as of 2003), they did not address the personal characteristics, beliefs and perceptions of those who left teaching entirely ("leavers") or those who continued to teach ("stayers") or those who left teaching but stayed in the school system ("non-teaching educators") nor did they examine only public school teachers.

In this study, I will analyze the personal characteristics, beliefs and perceptions that differentiate the public school "leavers," "stayers," and "non-teaching educators" that leads them to either leave, stay or move within their professions. The ideas and expectations that have formed my conceptual map are—

1) Not all public school teachers leave the education field entirely. There is a distinctive group of public school teachers that takes up non-teaching jobs within the education system after leaving teaching and

2) The three groups under investigation ("leavers," "non-teaching educators," and "stayers") have varying beliefs and perceptions about their current jobs that sets them apart from one another.

A conceptual model is presented in Figure 1.

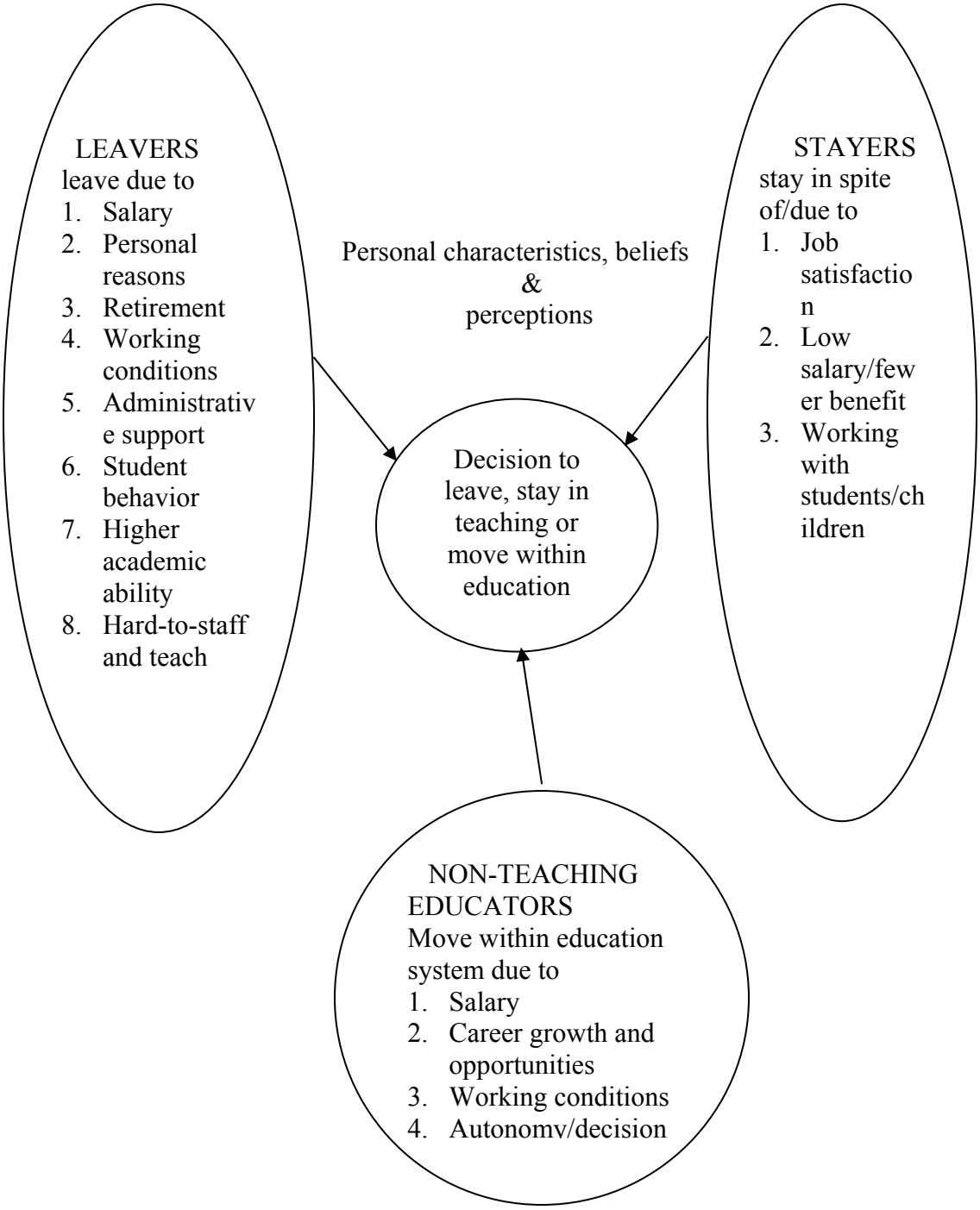

Figure 1: Conceptual Map

3. Method

Study Purpose

The study will differentiate the "non-teaching educators" from the other two groups, namely, the "leavers" and "stayers," identify the non-teaching positions they occupy and investigate the personal characteristics, beliefs and perceptions of their current jobs for all the three groups. The following research questions will be addressed:

RQ1. Are higher ability individuals more likely to stay in teaching?

RQ2. Are individuals with additional years of education past their Bachelor's degree more likely to stay in teaching?

RQ3. Among the seven components of current jobs of leavers, non-teaching educators, and stayers, is one higher than the other in its rating?

RQ4. Among the various components each for school/class characteristics, is one higher than the other in its rating for stayers to enable them to stay as well as be satisfied in teaching?

Data Sources

Previous studies have investigated teacher turnover and attrition using data from the school districts and states (e.g., Lankford et al., 2002; Podgursky et al., 2004; Ondrich et al., 2005; & Hanushek et al., 2004) and nationally representative datasets such as the Schools and Staffing Survey (SASS) and the associated Teacher Follow-Up survey (TFS) (e.g., Bobbitt et al., 1994; Whitener et al., 1997; Marvel et al., 2006 & Ingersoll & Smith, 2003). The SASS/TFS dataset only follow teachers for one year, thereby not tracking those teachers who continue to teach past their first year but leave early in their careers. Another major limitation of all these studies is that they do not differentiate the teacher "leavers" from those who took other non-teaching positions within the school system ("non-teaching educators"). Additionally, they don't differentiate between public and private school teachers.

To overcome these limitations, I will use the National Center for Education Statistics' (NCES) 1993 Baccalaureate and Beyond Longitudinal Study, Third Follow-Up (B&B: 93/03) to conduct the analyses, examining only those sample members who were employed full time in 2003. This study will be useful in informing about the three groups—public school "leavers," "non-teaching educators," and "stayers," and add to the growing literature using this dataset since only a handful of studies have used B&B 93/03 dataset to study teachers in the past few years (e.g., Henke, Zahn, & Carroll, 2001; Alt, Henke, & Perry, 2007; Bacolod, 2007; Feng, 2006; Fong, 2006).

Some of the advantages of using the Baccalaureate and Beyond Longitudinal Study (B&B) is that it provides information concerning education and work experiences

after completion of bachelor's degrees. It provides both cross-sectional information one year after bachelor's degree completion and longitudinal data concerning entry into and progress through graduate-level education and the workforce in 1997 and 2003. This information is not available through follow-ups involving high school cohorts or even college-entry cohorts, both of which are restricted in the number who actually complete the bachelor's degrees and continue their education. The dataset provides information concerning graduate study and long-term employment experiences after degree completion (NCES, 2007).

Survey respondents for the dataset were sampled from the 1992–93 National Postsecondary Student Aid Study (NPSAS: 93), where they were identified as receiving their bachelor's degrees in 1993. In the base year survey, students were asked questions about their future employment and education expectations and their undergraduate education. In the 1994, 1997, and 2003 follow-ups, students were asked about their job search activities and education and employment experiences after graduation. Individuals who had shown an interest in becoming teachers were asked additional questions about their pursuit of teaching, and if they were already teaching, about their current teaching position. About 11,192 students were identified in NPSAS: 93.

The NPAS: 93 survey employed a stratified multi-stage sample design with post-secondary institutions as the first-stage unit and students within schools as the second-stage unit. The institution sample was stratified by type of control (public vs. private), highest degree offered, size of enrollment in professional programs, graduate student enrollment, and the number of bachelor's degrees awarded in education. The target

population for NPAS: 93 contained nearly all postsecondary institutions in the 50 states, the District of Columbia, and Puerto Rico.

The B&B: 93/03 dataset provides an important opportunity to compare the personal characteristics, beliefs and perceptions of teachers who left their positions entirely ("leavers") with those took up non-teaching positions ("non-teaching educators") and those who stayed ("stayers"). Of the 11,192 B&B graduates, approximately 8,500 full and part-time employed remained in the B&B: 93/03 panel sample. I will examine those who are public school, full-time teachers, or former public school teachers yielding approximately 2,000 full-time employed, including 36 "leavers," 59 "non-teaching educators" and 946 "stayers" (unweighted). The weighted sample is 4,044 "leavers," 5,507 "non-teaching educators," and 100, 936 "stayers."

The following two weights will be used throughout the analyses—Balanced Replicate Weights (BRR) and the Panel Weights (BNBPANL3). The BRR procedure is a variance estimation procedure that computes the variance based on a balanced set of pseudo-replicates. They were computed because of concern that the variances for medians and other quantiles might not be appropriate when computed using Taylor series or other methods such as the Jackknife procedure. The BNBPANL3 is the panel longitudinal weight applied to all the respondents in the three interviews.

Limitations

Certain limitations of using B&B are recognized. There was inconsistency in the usage of similar variable names from 1993 to 2003 which made it challenging to pick the correct variables for the study. Further, there were duplicate variables with similar data

them over the period of 1993 to 2003. In order to obtain the second group of teachers i.e. "non-teaching educators," coding was done but due to discrepancy in the verbatim and/or descriptive responses, hand searches were conducted to correct for human errors. Only those variables that were present in the dataset that were close to the research questions were selected. It may be so that the variables do not capture the essence of the questions completely.

Coding

The following three variables were used to obtain the three groups for further analyses. The coding was done in SAS 9.0-

AJOBOCCR- April 1994 Occupation code (code 24=K-12 Teachers; 25=Instructors other than K-12

B2AJOBR- April 1997 Occupation code (same as AJOBOCCR)

B3OCCR- April 2003 Occupation code (same as AJOBOCCR)

If LEAVER=1 AJOBOCCR=24 (code 24 for K-12 teachers); B2AJOBR NE 24 and STATUS GT2 and TJOB=1, we get "leavers" (where STATUS= teacher status of respondent at the time of interview; TJOB=had any teaching jobs since earning a degree)

If LEAVER=1 AJOBOCCR=24 and B2AJOBR=24/25 and B3OCCR=25 we get "non-teachers."

If LEAVER=1 AJOBOCCR=24 and B2AJOBR=24 and B3OCCR=24 we get "stayers"

Finally, Leavers=1, Non-teaching educator=2 and Stayers=3 in the final dataset.

Variables

Two sets of variables will be analyzed—Personal characteristics of teacher "leavers," "stayers," and "non-teaching educators," that include the demographic, and academic information of the three groups; and beliefs and perceptions that include reasons for staying or leaving their teaching careers, and attitudes towards current job.

Specifically, the following variables will be investigated. The impact of general level of job satisfaction on the decision to leave or stay in their jobs for the three groups will be examined. Inclusion of the variables such as final GPA in undergraduate studies of the three groups will indicate if higher ability teachers decide to leave or stay in their professions. Personal characteristics such as age, gender, race/ethnicity, marital status, and number of dependent children under the age of 18 will provide rich distinguishing features of the three groups. Table 1 presents the variables.

Table 1

Variables under investigation for analyses- Predictor variables

Personal Characteristics

Variable name	Name given	Range of values
B3AGE	Age	Continuous variable
GENDER	Gender	0=Male 1=Female
B2ETHNIC (recoded)	Race/ethnicity	0=all others 1= White
B3MARITAL (recoded)	Marital status	0=all others 1=Married/

		Co-habiting
B3NUMCH	Number of dependent children under the age 18	Continuous variable

Ability

Variable name	Name given	Range of values
BAMAJOR (recoded)	Major field of study in B.A.	0=all others 1= Education
B3HDG03	Highest degree attained in 2003	Ordinal variable 1= Bachelor's degree, 2= Post-baccalaureate certificate, 3= Master's degree, 4= Post-master's certificate, 5= First-professional degree, 6= Doctoral degree
NORMGPA		GPA in undergraduate studies Continuous variable

Beliefs and Perceptions- Reasons for Leaving Teaching by Leavers and Non-teaching educators

Variable name	Name given	Range of values
B3LFTTCH	Reasons for leaving teaching	1= Pay, 2= Change jobs out of education, 3= Change jobs within education, 4= Raise a family, 5= Other (not specified), 6= Difficulty with students, parents and/or administrators.

Current Job Satisfaction for all Groups

Variable name	Name given	Range of values
B3JOBSC	2003 job: Satisfaction with work challenge	0=No 1=Yes
B3JOBSB	2003 job: Satisfaction with fringe benefits	0=No 1=Yes
B3JOBSF	2003 job: Satisfaction with job security	0=No 1=Yes

B3JOBSA	2003 job: Satisfaction with pay	0=No 1=Yes
B3JOBSE	2003 job: Satisfaction with opportunity to use education	0=No 1=Yes
B3JOBSD	2003 job: Satisfaction with promotion	0=No 1=Yes

Beliefs and Perceptions regarding Staying in Teaching for Stayers (Why do you plan to stay in teaching)-Stayers

Variable name	Name given	Range of values
B3STAYA	Enjoy working with students	0=No 1=Yes
B3STAYB	Work is rewarding	0=No 1=Yes
B3STAYC	Flexible schedule	0=No 1=Yes
B3STAYD	Autonomy	0=No 1=Yes
B3STAYE	Giving back to society	0=No 1=Yes
B3STAYF	Enjoy subject matter	0=No 1=Yes

Job Satisfaction for Stayers (aspects of teaching you are most satisfied with)

Variable name	Name given	Range of values
B3TSATD	Satisfaction: class size	0=No 1=Yes
B3TSATB	Satisfaction: school environment	0=No 1=Yes
B3TSATC	Satisfaction: student discipline	0=No

		1=Yes
B3TSATA	Satisfaction: student motivation	0=No 1=Yes
B3TSATE	Satisfaction: support from parents	0=No 1=Yes

Analysis

First, I conducted weighted comparative descriptive analyses and frequencies of the three groups in order to understand their personal characteristics, and reasons for leaving or staying in teaching. Comparative descriptive analyses included the means of personal characteristics such as: Age, and NORMGPA. Frequencies and their percentages were calculated for personal characteristics such as: Gender, Marital status, Race/Ethnicity, Number of children under the age 18, BA Major and Highest Degree attained. Variables such as Gender were recoded to Female=1, Male=0, Marital status was recoded to Married/Co-habiting =1 and all others=0 (divorced, separated, widowed), and BA Major was recoded to Education=1 and all others=0 (Engineering, Science, Humanities, Finance/Accounting, Others). Further, the reasons why leavers and non-teaching educators left teaching were investigated and the positions and the types of jobs the "leavers" and "non-teaching educators" go to after leaving teaching were outlined. Secondly, I conducted weighted Student's *t*-tests to determine if higher ability individuals (with higher NORMGPA) among the three

groups decided to leave or stay in teaching and those with additional years of education past their Bachelor's degree (Highest Degree attained) planned to stay in education. Thirdly, I conducted One-way ANOVA to determine if among the various components of current jobs (all groups) and beliefs and perceptions (for stayers), one component had a higher mean than the other. Finally, I constructed decision trees using Weka software (http://www.cs.waikato.ac.nz/ml/weka/) to determine the various attributes of stayers that enabled them to stay and be satisfied with their current jobs. All statistical results were tested for significance at $p<.05$ level.

A decision tree is a data-mining tool of decision-making theory and practice which not only shows the decision-making route, but also shows the thought processes behind it (Montbriand, 1995; Lin, 1999). It is primarily based on alternative criteria, and outcomes in a decision-making process (Gladwin, 1989). Therefore, such trees are particularly useful in situations of complex multistage decision problems (Zhuang, 1996). When explanatory models such as regression and path analysis are unable to explain the complexity of prediction between the predictor and the outcome variables (Herzog, 2006), a decision tree can sift through a set of large number of predictor variables and successively split a data set into subgroups to improve the prediction (classification) of a target (dependent) variable (Veitch, 2004). By providing predictions at the individual level, a decision tree provided higher degrees of granularity (Chang, 2006). A decision tree can combine ethnographic research and linear hypothesis-testing plan (Gladwin, 1989). Qualitative research conducted by Gladwin (1989) on patients showed that a

decision tree can be used to better understand and validate an individual's viewpoint while making a particular decision. Published studies on the use and prediction accuracy of data-mining approaches in fields outside education research such as engineering (particularly, transportation), marketing and advertising are plenty (Veitch, 2004). Only a few studies have used decision trees in higher education—particularly, in conducting institutional research to estimate student retention and degree-completion time (Herzog, 2006), identifying characteristics of high school dropouts (Veitch, 2004), enrollment behaviors of undergraduate students (Chang, 2006), studying course-taking patterns of undergraduate students (Eykamp, 2006), and individual satisfaction level of various racial/ethnic groups of undergraduates in their current education (Einarson & Matier, 2004). Some the advantages of decision tree are (Quinlan, 1983; Witten & Eibe, 1999):

1) Decision tree methods produce models that are easy to interpret. At each non-terminal node, a decision is based upon just one predictor variable which makes it easy to follow. For example, to explain a particular classification/explanation of predictor and dependent variables, one need only look at the series of simple decisions that contributed to it. The final tree model can be cast into a set of rules one can follow to classify/explain a given case. In comparison, generalized linear models use linear combinations of variables that can be difficult to interpret or explain at individual levels or in depth.

2) Tree models make no assumptions about the normal distribution of the underlying data and they are thus a non-parametric procedure. This can be especially useful if the distribution of the data is indeed unknown as in some large scale longitudinal datasets.

3) Decision tree methods are easily able to handle both categorical and continuous variables.

4) Decision tree methods have a built-in feature selection method that makes them immune to the presence of useless variables. Such variables are ignored and they do not affect the tree building process. This is a common problem with over-parametized datasets which disrupt the process of terminating a tree node at points where it's easy to interpret the results.

5) Tree models are very adept at revealing complex interactions between variables. Each branch of a tree can contain different combinations of variables and the same variable can appear more than once in different parts of the tree. This can reveal how a variable can depend on another and in what specific context this dependency exists.

6) Decision tree models are extremely robust to the effect of outliers in a dataset—which means that if there are cases/observations that are numerically distant from the rest of the data in the variable, they may affect the median of the distribution and/or affect the standard error of the analysis overall. This is so because the models are constructed in a frequency-based technique where one is counting the instances in a split. Outliers that occur in the independent variables do not affect the tree growing process because the values used to split each node are not likely to be on the outlier values. Outliers in the dependent variable go into their own nodes and do not affect the rest of tree.

A decision tree was particularly useful to my study where my dependent variables (beliefs and perceptions about staying and being satisfied about teaching) were

categorical variables (0, 1) and the independent variables were continuous as well as categorical. The decision trees which will enable in better understanding the specific attributes of stayers who have decided to stay in teaching and express satisfaction in their career choices. Table 2 summarizes the connection between each research question, and the data analyses procedures.

Table 2

Methodology Summary

1. Are higher ability individuals more likely to stay in teaching?	*t*- test
2. Are individuals with additional years of education past their bachelor's degree more likely to stay in teaching?	*t*- test
3. Among the seven components of current jobs of leavers, non-teaching educators, and stayers, is one higher than the other in its rating?	Percentages One-way ANOVA
4. Among the various components each for school/class characteristics, is one higher than the other in its rating for stayers to enable them to stay as well as be satisfied in teaching?	Means plots One-way ANOVA Decision tree

Statistical Tools

Data coding and statistical analyses will be conducted on SPSS and AM Softwares (http://am.air.org), respectively. AM is a statistical software package for analyzing data from complex samples such as the National Assessment of Educational Progress (NAEP), the Third International Mathematics and Science Studies (TIMSS) and B&B: 93/03 survey. The developers of AM at the American Institutes for Research (AIR) recommend using AM for the following reasons:

> From its origin as a specialized tool for analyzing large-scale assessment data, AM has evolved into a more generalized and growing tool for analyzing data from complex samples in general. Originally, AM was developed to estimate regression models through marginal maximum likelihood (MML). Because large-scale assessments are often low-stakes assessments for students, students are usually asked to respond to only a few items; each student sees only part of the whole test. Otherwise, they would be unlikely to expend real effort on any items. As a result, individual test scores are subject to substantial measurement error, which would bias many statistical estimates. Rather than assign each student an error-filled score, MML procedures represent each student's proficiency as a probability distribution over all possible scores. MML procedures use these probability distributions in the estimation process (http://am.air.org).

Another characteristic of large-scale assessments has led to a wider applicability of AM—they almost always draw a sample from a complex design. AM automatically provides appropriate standard errors for complex samples using a Taylor-series approximation. This happens automatically even when new procedures are added to the software. Over time, the software has grown to offer a set of non-MML statistics, including regression, probit, logit, cross-tabs, and other statistics that are useful for survey data in general.

Weka is an open source software that is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a dataset or imported from a Java™ code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. It is also well-suited for developing new machine learning schemes. According to the developers of the Weka software at the University of Waikato (New Zealand):

> Weka builds the decision tree models by a process known as recursive partitioning. First, the original data is broken up into 2 or more non-overlapping sub-samples. The original sample is also known as the root node and each of the sub-samples is referred to as a node. The partitioning is done based on one of the independent variables known as the splitting attribute. Branches are drawn for different values of this splitting attribute. Each instance in the root node is sent down one of the branches (depending on its value for the splitting attribute) into one of the nodes. The choice of splitting/dividing an attribute is done by picking

> the attribute that will partition the original sample into sub-samples that are as homogenous as possible in relation to the class variable. It is a similar idea when choosing on what values of the splitting attribute to perform the partitioning (www.cs.waikato.ac.nz/ml/weka/).

As a second step, the process is repeated for each of the nodes created in the first step. Each node is partitioned by considering only the cases in that node and new nodes are created from instances in that node alone. This process is repeated for each node until some stopping-rule is violated. When this happens, the node is not further partitioned and this node is referred to as leaf node. The whole process is terminated when there are only leaf nodes left.

Importance

Since the early 1980s, educational policy analysts have predicted that shortfalls of teachers resulting primarily from two converging demographic needs- increasing student enrolments and increasing teacher retirements- would lead to high teacher attrition and problems staffing schools with qualified teachers. However, the literature review shows several conflicting definitions of teacher attrition, including retirement, moving to non-teaching jobs within school systems, and such "time-out" activities as caring for family members and childbirth contribute to a substantial percentage of teacher attrition.

The proposed study will clearly differentiate the public school teacher "leavers" (who leave teaching after 5 years) from those who take up non-teaching positions within the school system, i.e., "non-teaching educators" from those who remain in teaching, i.e.,

"stayers." Variables such as final GPA in undergraduate studies and highest degree attained of the three groups will indicate if higher ability individuals and those with additional years of education past their bachelor's decide to remain or leave teaching altogether. Personal characteristics such as age, gender, race/ethnicity, marital status, salary, and number of dependent children under the age of 18 will provide rich distinguishing features of the three groups in question. Last but not the least, the decision trees for stayers will provide very useful insights into the individual characteristics of stayers who remain in teaching and express satisfaction with it. Therefore, the results of this study will prove to be useful to policymakers in understanding the characteristics of leavers and non-teaching educators to target their retention efforts on them better and also understand the characteristics of stayers to make their retention policies even stronger at all grade levels.

Finally, regardless of how small the groups of teacher "leavers" actually are of all teachers in public schools, and the reason a teacher leaves teaching, the end result is that the educational system loses a teacher. Understanding the reason why a teacher leaves, where s/he goes are critical from the standpoint of constructing effective teacher retention policies.

4. Results

Overview of the Study

The purpose of the study was to analyze the personal characteristics of "leavers," "non-teaching educators," and "stayers"; outline the types of jobs "leavers," and "non-teaching educators" went to and understand the beliefs and perceptions about the current/previous jobs for all the three groups. The following research questions guided the study:

RQ1. Are higher ability individuals more likely to stay in teaching?

RQ2. Are individuals with additional years of education past their Bachelor's degree more likely to stay in teaching?

RQ3. Among the seven components of current jobs of leavers, non-teaching educators, and stayers, is one higher than the other in its rating?

RQ4. Among the various components each for school/class characteristics, is one higher than the other in its rating for stayers to enable them to stay as well as be satisfied in teaching?

Comparative Personal Characteristics

Weighted comparative descriptive analyses and frequencies were conducted for the three groups to understand their personal characteristics such as: Age, Marital status, Race/ethnicity, Number of children under the age 18, NORMGPA, BA Major, and Highest degree attained. Descriptive statistics indicated that the mean age of Stayers was higher compared to those of Leavers and Non-teaching educators. Compared to Non-teaching educators and Stayers, Leavers had a higher GPA. A majority of Leavers, Non-teaching educators and Stayers were females, married, whites, and had education as their major in the bachelor's program. Compared to Leavers and Non-teaching educators, Stayers had a higher percentage of having one child under the age of 18. Leavers and Stayers had a higher percentage with bachelor's as their highest degree attained; and a higher percentage of Non-teaching educators had master's as their highest degree attained. Table 3 presents the comparative descriptives for age, and NORMGPA. Table 4 presents the frequencies and percentages for Marital status, Race/ethnicity, Number of children under the age 18, BA Major, and Highest degree attained.

Table 3

Comparative Descriptives for Leavers, Non-teaching educators and Stayers

Variable	Group 1	Group 2	Group 3
Age	Leavers *n*= 4,044	Non-teaching educators *n*=5,507	Stayers *n*=100,936
Mean	35.46	33.88	36.83
SD	5.36	2.83	7.05
Minimum	32	31	30
Maximum	55	47	72
NORMGPA			
Mean	310.30	260.55	285.51
SD	59.94	208.94	165.88
Minimum	204	184	196
Maximum	396	400	400

Table 4

Frequency Distribution of Personal Characteristics for Leavers, Non-teaching educators and Stayers

Variable	Group	*n*	%
Marital status (1=married/co-habiting)	Leavers	2,312	57.1
	Non-teaching educators	4,520	82.2
	Stayers	77,212	77.3
Gender (1=females)	Leavers	2,348	58
	Non-teaching educators	4,121	74.8
	Stayers	77,367	76.6
Race/ethnicity (1=white)	Leavers	3,711	91.7
	Non-teaching educators	3,804	69
	Stayers	85,208	84.4
Number of children under the age 18	Leavers	1	26.3
		2	55.4
		3	18.3

	Non-teaching educators	1	32.2
		2	59.1
		3	8.7
	Stayers	1	59
		2	36.1
		3	4.9
BA Major (1=education)	Leavers	1	69.4
	Non-teaching educators	1	59.1
	Stayers	1	56.6
Highest degree attained (1=Bachelor's, 2-Post-graduate certificate, 3=Master's, 4-Post-master's certificate, 5=First professional degree, 6=Doctorate)	Leavers	1	68
		2	6
		3	26
	Non-teaching educators	1	24.5
		2	3.7

		3	71.8
Highest degree attained (1=Bachelor's, 2-Post-graduate certificate, 3=Master's, 4-Post-master's certificate, 5=First professional degree, 6=Doctorate)	Stayers	1	58.1
		2	4.6
		3	36.2
		4	1
		6	0.1

Reasons for Leaving Teaching

The reasons why Leavers left teaching entirely and Non-teaching educators took up other non-teaching positions within the educational system were investigated. As suggested from the results, Leavers cited reasons of low pay (30%), followed by difficulty with students, parents, and/or administrators (28.4%); while Non-teaching educators cited finding jobs within education (58.5%), followed by low pay (23.3%) as the main reasons for leaving teaching. Table 5 presents the frequencies for the two groups. Multiple reasons could be chosen by the responders.

Table 5

Frequency Distribution of Reasons of Leaving Teaching for Leavers, and Non-teaching educators

Group	Variable	*n*	%
Leavers (N=3,310)	Low pay	1,007	30.4
	Difficulty with students, parents, and/or administrators	941	28.4
	To change jobs out of education	371	11.2
	Health reasons	253	7.6
	To change jobs within education	371	6.7
	Other (not specified)	186	5.6
	Laid off or work force reduction	129	3.9
	Relocated	103	3.1
	Raise a family or other family demands	98	3
Non-teaching educators (N=4,406)	To change jobs within education	2,579	58.5
	Low pay	1,025	23.3

Other (not specified)	664	15.1
Difficulty with students, parents, and/or administrators	138	3.1

Where do Leavers and Non-teaching educators go after Leaving Teaching?

The types of jobs that the Leavers and Non-teaching educators go to were outlined. As the results indicated, Leavers chose to open their own business or were self-employed, joined sales and/or marketing jobs, took other jobs in other private industries or became lawyers. Among Non-teaching educators, a majority of them chose to become school counselors followed by school psychologists and other administrative jobs such as principal and assistant principal. Tables 6 and 7 present the types of jobs Leavers and Non-teaching educators go to upon leaving teaching and their percentages.

Table 6

Types and Percentages of Jobs taken by Leavers

Name of job	%
Own business/Self-employed	10
Sales and marketing	8

Actor, architect, adjudicator, bartender, construction business, contract specialist, human services professional, media specialist, scientist in research labs, social worker, therapist	3-5
Attorney, Technology specialists	2

Table 7

Types and Percentages of Jobs taken by Non-teaching educators

Name of job	%
School counselor	12
Assistant principal	10
School psychologist	7
Principal	5
Librarian/Media specialist in school	5
Special education coordinator/specialist	4
Speech pathologist	3
Coordinator of education programs, attendance coordinator, grant coordinator, education program assistant, technical instructor, technology consultant, training specialist, advisor to students, admissions, youth education programs coordinator	2-3

Characteristics of Leavers, Non-teaching educators and Stayers

To determine if the difference in abilities may contribute to their decision to stay/leave teaching, a Student's *t*-test was conducted comparing the NORMGPA of Leavers, Non-teaching educators and Stayers. As presented in Table 8b, there was a statistically significant difference between the NORMGPA of Leavers (*M*=310.30, *SD*=59.947) and Non-teaching educators (*M*=260.55, *SD*=208.94), *t* (44) =2.82, *p*=.007. This suggests that individuals with higher NORMGPA (leavers) tend to leave teaching for other jobs. Table 8a presents the descriptives and Table 8b the *t*-test results.

Table 8a

Comparative Descriptives of NORMGPA for Leavers, Non-teaching educators and Stayers

Group	*N* (Weighted)	Mean	*SE* (Mean)	*SD*
Leavers	4,044	310.30	18.38	59.94
Non-teaching educators	5,507	260.55	26.07	208.94
Stayers	100,936	285.514	8.80	165.88

Table 8b

Comparison of NORMGPA between Leavers, Non-teaching educators and Stayers

Group 1	Group 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	$p<t$
Leavers	Non-teaching educators	310.30	260.55	49.74	17.62	2.82	.007
Leavers	Stayers	310.30	285.51	24.78	14.84	1.67	.102
Stayers	Non-teaching educators	285.51	260.55	24.96	25.53	.97	.334

Among the three groups, to determine if additional years of education past their bachelor's degree contributes to their decision to stay or leave teaching was significant; a *t*-test was conducted comparing the Highest degree attained of Leavers, Non-teaching educators and Stayers. As presented in Table 9b, there was a statistically significant difference between the Highest degree attained by Leavers (M=1.58, SD=.87), and Non-teaching educators (M=2.70, SD=.94), t (44) = 4.50, p= .000 as well as between Non-teaching educators (M=2.70, SD=.94) and Stayers (M=1.80, SD=.98), t (44) =5.75, p=.000. These results suggest that the percentage of individuals who leave (leavers as well as non-teaching educators) and stay who have additional years of education past their bachelor's is not statistically significant. However, non-teaching educators do have

more advanced degrees in comparison to both the leavers and stayers. Table 9a presents the descriptives and Table 9b presents the *t*-test results.

Table 9a

Comparative Descriptives for Leavers, Non-teaching educators and Stayers for Highest Degree Attained

Group	*N* (Weighted)	Mean	*SE* (Mean)	*SD*
Leavers	4,044	1.58	.21	.87
Non-teaching educators	5,507	2.70	.10	.94
Stayers	100,936	1.80	.07	.98

Note: 1=Bachelor's, 2=Post-baccalaureate degree, 3=Master's, 4=Post-master's certificate, 5=First professional degree, 6=Doctoral degree

Table 9b

Comparison of Highest degree attained between Leavers, Non-teaching educators and Stayers

Group 1	Group 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	$p<t$
Non-teaching educators	Leavers	2.70	1.58	1.12	.24	4.5	.000
Stayers	Leavers	1.80	1.58	.22	.24	.91	.367

Non-teaching educators	Stayers	2.70	1.80	.89	.15	5.7	.000

Satisfaction with Current Jobs for Leavers, Non-teaching educators and Stayers

To understand the levels of satisfaction with current jobs by Leavers, Non-teaching educators, and Stayers; means were calculated for each of the seven components of the variable 2003 Job satisfaction followed by One-way ANOVA on each of the variables for the three groups. The seven components included—Generally satisfied, Satisfaction with challenge of work, Satisfaction with fringe benefits, Satisfaction with further education, Satisfaction with job security, Satisfaction with pay, and Satisfaction with promotion. AM software calculates ANOVA by using the Bonferroni correction option for multiple comparisons and gives a *t* statistic value in the output.

As the results suggest, among Leavers, higher percentage of them cited being Generally satisfied with their current jobs (94%) compared with non-teaching educators (60%) and stayers (49%), followed by Satisfaction with challenge of work (84%). Among Non-teaching educators, 72% of them cited Satisfaction with job security, followed by 64% who cited Satisfied with further education. Compared to Leavers (94%) and Non-teaching educators (60%), only 49% of Stayers cited that they were Generally satisfied with their current jobs; and only 48% cited being Satisfied with challenge of work. Overall, among the three groups, a higher percentage of leavers cited Generally satisfied,

Satisfaction with challenge of work, and Satisfaction with pay in their current jobs. Whereas, compared to leavers and stayers, a higher percentage of non-teaching educators cited Satisfaction with fringe benefits, Satisfaction with further education, and Satisfaction with job security. Table 10 presents the percentages for the three groups for the seven components of the variable Job satisfaction in current jobs.

Table 10

Percentages of Leavers, Non-teaching educators and Stayers who are satisfied with jobs

Variable component	Leavers (*n*=4,044) %	Non-teaching educators (*n*=5,507) %	Stayers (*n*=100,936) %
Generally satisfied	94	60	49
Satisfaction with challenge of work	84	60	48
Satisfaction with fringe benefits	44	55	14
Satisfaction with further education	58	64	41
Satisfaction with job security	57	72	45
Satisfaction with pay	75	15	9
Satisfaction with promotion	46	45	15

Separate one-way ANOVAs were conducted to compare the seven components of 2003 Job satisfaction for Leavers, Non-teaching educators, and Stayers. Compared to Leavers and Non-teaching educators, Stayers tended to be generally more satisfied with their current job/position in relation to all the seven components. Results for Leavers, Non-teaching educators and Stayers are presented separately.

Leavers

As suggested from the results, there was statistical significance between the components Generally satisfied (*M*= .94, *SD*=.22) and Pay (*M*=.75, *SD*=.43), *t* (44) = 2.15, *p*=.037. None of the other components showed statistically significance. These results suggest that the Leavers tend to leave teaching due to low pay and they may express a general satisfaction with their current jobs which most likely pays them higher compared to their previous one. However, I don't have any data to investigate the salary component of the leavers or other groups to support my results further. Table 11a presents the descriptives and Table 11b presents the ANOVA results for Leavers.

Table 11a

Descriptive analysis of Current job Satisfaction Components for Leavers

Component	Weighted *N*	Mean	*SE* (Mean)	*SD*
Generally satisfied	4,044	.94	.04	.22

Challenge of work	4,044	.84	.13	.36
Fringe benefits	4,044	.44	1.75	1.63
Further education	4,044	.58	.30	1.52
Job security	4,044	.57	.24	1.52
Pay	4,044	.75	.12	.43
Promotion	4,044	.46	.31	1.52

Table 11b

Analysis of Variance between Current job satisfaction components for Leavers

Component 1	Component 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	$p<t$
Generally satisfied	Challenge of work	.94	.84	.10	.17	.59	.558
Generally satisfied	Fringe benefits	.94	.44	.50	1.72	.29	.771
Challenge of work	Fringe benefits	.84	.44	.40	1.76	.22	.824
Generally satisfied	Further education	.94	.58	.36	.34	1.05	.299
Challenge of work	Further education	.94	.58	.25	.20	1.27	.209

Further education	Fringe benefits	.58	.44	.14	1.98	.07	.943
Generally satisfied	Job security	.94	.57	.37	.29	1.28	.207
Challenge of work	Job security	.84	.57	.27	.16	1.60	.115
Job security	Fringe benefits	.57	.44	.12	1.95	.06	.948
Further education	Job security	.58	.57	.01	.06	.21	.829
Generally satisfied	Pay	.94	.755	.19	.08	2.1	.037
Challenge of work	Pay	.84	.75	.08	.25	.34	.73
Pay	Fringe benefits	.75	.44	.31	1.6	.18	.852
Pay	Further education	.75	.58	.17	.42	.40	.684
Pay	Job security	.75	.57	.18	.36	.50	.618
Generally satisfied	Promotion	.94	.46	.48	.35	1.34	.186
Challenge of work	Promotion	.84	.46	.37	.25	1.50	.139
Promotion	Fringe benefits	.46	.44	.023	2.03	.01	.991
Further education	Promotion	.58	.46	.11	.09	1.31	.194

Job security	Promotion	.57	.46	.11	.08	1.21	.232
Pay	Promotion	.75	.46	.29	.42	.67	.501

Non-teaching educators

For Non-teaching educators, as the results suggest, there were statistically significance between the components Generally satisfied (*M*= .60, *SD*=1.16) and Pay (*M*=.15, *SD*=1.10), *t* (44) = 2.697, *p*=.010, and Job security (*M* =.71, *SD* =.92) and Pay (*M*=.15, *SD*=1.10), *t* (44) = 3.18, *p*=.003. These results suggest that for Non-teaching educators, Pay and Job security may have contributed in their being Generally satisfied with their current jobs. Although, pay was not one of the primary reasons for leaving teaching, the non-teaching educators placed high importance to their current job security to be satisfied in their jobs. I don't have salary information for Non-teaching educators to conduct any further analysis. There were no statistically significant differences between all other components for Non-teaching educators. Table 12a presents the descriptives and Table 12b presents the ANOVA results for Non-teaching educators.

Table 12a

Descriptive analysis of Current job Satisfaction Components for Non-teaching educators

Component	Weighted *N*	Mean	*SE* (Mean)	*SD*
Generally satisfied	5,507	.60	.09	1.16
Challenge of work	5,507	.59	.21	1.20
Fringe benefits	5,507	.55	.10	.95
Further education	5,507	.64	.15	.99
Job security	5,507	.71	.11	.92
Pay	5,507	.15	.17	1.10
Promotion	5,507	.44	.23	1.15

Table 12b

Analysis of Variance between Current job satisfaction components for Non-teaching educators

Component 1	Component 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	*p<t*
Generally satisfied	Challenge of work	.60	.59	.007	.23	.02	.997
Generally	Fringe	.60	.55	.05	.17	.29	.767

satisfied	benefits						
Challenge of work	Fringe benefits	.59	.55	.04	.26	.17	.864
Further education	Generally satisfied	.64	.60	.04	.15	.25	.797
Further education	Challenge of work	.64	.59	.04	.30	.15	.87
Further education	Fringe benefits	.64	.55	.09	.18	.50	.61
Job security	Generally satisfied	.71	.60	.11	.14	.80	.428
Job security	Challenge of work	.71	.59	.12	.29	.41	.677
Job security	Fringe benefits	.71	.55	.16	.15	1.0	.278
Job security	Further education	.71	.64	.07	.18	.39	.692
Generally satisfied	Pay	.60	.15	.44	.16	2.69	.010
Challenge of work	Pay	.59	.15	.44	.29	1.49	.141
Fringe benefits	Pay	.55	.15	.39	.20	1.90	.064
Further education	Pay	.64	.15	.49	.26	1.8	.071
Job security	Pay	.71	.15	.56	.17	3.1	.003
Generally	Promotion	.60	.44	.15	.20	.75	.454

satisfied

Challenge of work	Promotion	.59	.44	.15	.26	.56	.577
Fringe benefits	Promotion	.55	.44	.10	.28	.35	.722
Further education	Promotion	.64	.44	.19	.33	.59	.558
Job security	Promotion	.71	.44	.27	.26	1.01	.317
Promotion	Pay	.44	.15	.29	.18	1.6	.115

Stayers

For Stayers, as the results show, there were statistically significant results between the components Pay (M=.09, SD=1.29) and Generally satisfied (M=.48, SD=1.31), t (44)=2.927, p =.005; Pay (M=.09, SD=1.29) and Challenge of work (M=.47, SD=1.40), t (44)= 4.49, p =.023, Fringe benefits (M=.14, SD=1.37) and Further education (M=.41, SD=1.34), t (44)= 5.90, p =.000; Fringe benefits (M=.14, SD=1.37), and Generally satisfied (M=.48, SD=1.31), t (44)= 7.96, p= .000 and Fringe benefits (M=.14, SD=1.37) and Challenge of work (M=.47, SD=1.40), t(44)=4.49, p= .000. In previous research conducted on B&B dataset (93/03) by Henke, Zahn & Carroll (2001), compared to Leavers and Non-teaching educators, Stayers were more likely to be satisfied with their current jobs/positions in relation to the seven components. However, these researchers used both public as well as private teachers who were both part-time

and/or full-time and substitute teachers. Their analyses also included a younger cohort (1994/1997) of college graduates. Table 13a presents the descriptives and Table 13b presents the ANOVA results for Stayers.

Table 13a

Descriptive analysis of Current job Satisfaction Components for Stayers

Component	Weighted N	Mean	*SE* (Mean)	*SD*
Generally satisfied	100,936	.48	.06	1.31
Challenge of work	100,936	.47	.10	1.40
Fringe benefits	100,936	.14	.05	1.37
Further education	100,936	.41	.05	1.34
Job security	100,936	.45	.11	1.30
Pay	100,936	.09	.09	1.29
Promotion	100,936	.14	.14	1.51

Table 13b

Analysis of Variance between Current job satisfaction components for Stayers

Component 1	Component 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	$p<t$
Generally satisfied	Challenge of work	.48	.47	.01	.05	.11	.910
Generally satisfied	Fringe benefits	.48	.14	.33	.04	7.9	.000
Challenge of work	Fringe benefits	.47	.14	.33	.07	4.4	.000
Generally satisfied	Further education	.48	.41	.07	.04	1.5	.133
Challenge of work	Further education	.47	.41	.06	.08	.80	.426
Fringe benefits	Further education	.41	.14	.26	.04	5.9	.000
Generally satisfied	Job security	.48	.45	.03	.142	.245	.808
Challenge of work	Job security	.47	.45	.02	.17	.16	.868
Job security	Fringe benefits	.45	.14	.30	.13	2.2	.228
Job security	Further education	.45	.41	.03	.10	.36	.720
Generally satisfied	Pay	.48	.09	.39	.13	2.92	.005

Challenge of work	Pay	.47	.09	.38	.16	2.35	.023
Fringe benefits	Pay	.14	.09	.05	.12	.42	.671
Further education	Pay	.41	.09	.32	.10	3.11	.403
Job security	Pay	.45	.09	.35	.045	7.9	.000
Generally satisfied	Promotion	.48	.15	.32	.17	1.8	.076
Challenge of work	Promotion	.47	.15	.32	.21	1.50	.139
Promotion	Fringe benefits	.15	.14	.01	.17	.07	.939
Further education	Promotion	.41	.15	.25	.14	1.68	.098
Job security	Promotion	.45	.15	.29	.11	2.60	.013
Promotion	Pay	.15	.09	.06	.10	.61	.544

Beliefs and Perceptions of Stayers with their Teaching Profession

Beliefs and perceptions regarding teaching for the Stayers were analyzed. In order to understand if among the various components each for school/class characteristics, is one component higher than the other in its rating to enable them to stay as well as be satisfied in teaching, first, a means plot was drawn for the six components related to

staying in teaching— Stay- Enjoy working with students, Work is rewarding, Flexible schedule, Autonomy, Giving back to society, and Enjoy subject matter. Secondly, a means plot was drawn for the five components related to being satisfied in teaching— Satisfaction- Class size, School environment, Student motivation, Student discipline, and Support from parents. One-way ANOVAs were conducted for each of the components to understand the aspects of staying and being satisfied in teaching for the group. Finally, decision trees were constructed to show the thought processes behind the decision of staying and being satisfied in teaching. Results for the two sets of components (six for staying and five for being satisfied are presented separately).

What Enables Stayers to Stay in Teaching

Means plot for the components related to what enables the stayers to stay in teaching indicated that the mean for Enjoy working with students was the highest (.77), followed by Work is rewarding (.61). The lowest mean was for Autonomy (.18). Figure 1 shows the means plot for the six components.

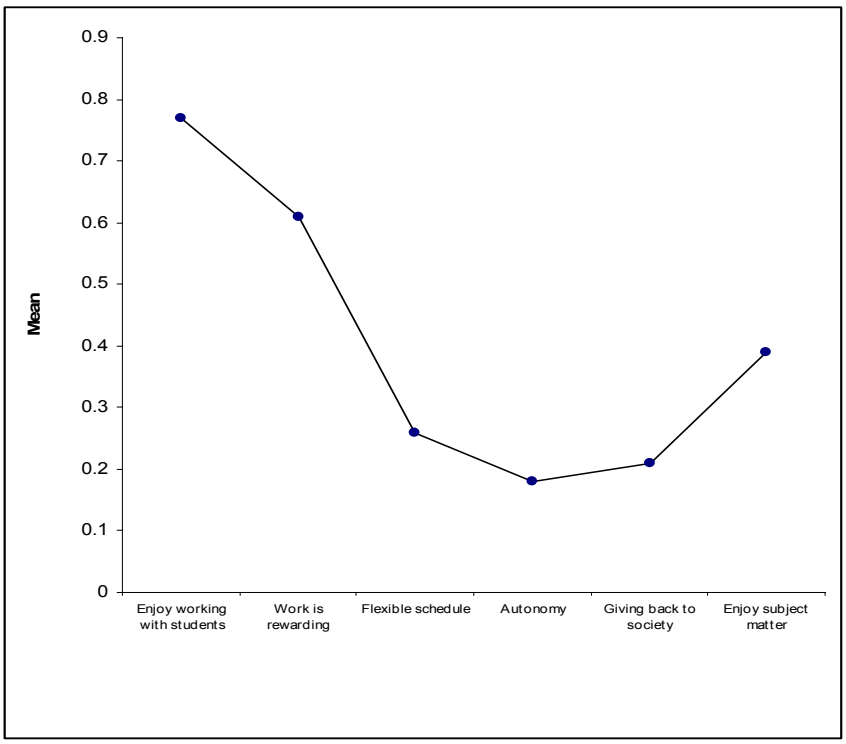

Figure 2. School/class Characteristics that Enable Stayers to Stay in Teaching

Secondly, ANOVA results suggested that there were statistically significant differences between Enjoy working with students (*M*=.77, *SD*=.41), and Autonomy in running a classroom (*M*=.18, *SD*=.38), *t* (44) =2.29, *p* =.026. No other components yielded in significant differences. These results suggest that Stayers who Enjoy working with students and have Autonomy in running their classroom are more likely to be satisfied with teaching and tend to stay in their profession. Table 14a presents the descriptives and Table 14b presents the ANOVA results.

Table 14a

Descriptive analysis of What Enables Stayers to Stay in Teaching

Component	Weighted *N*	Mean	*SE* (Mean)	*SD*
Enjoy working with students	91,877	.77	.16	.41
Work is rewarding	91,877	61	.18	.48
Flexible schedule	91,877	.25	.26	.43
Autonomy running a classroom	91,877	.18	.20	.38
Giving back to society	91,877	.21	.24	.41
Enjoy subject matter	91,877	.39	.29	.48

Table 14b

Analysis of Variance between Components of What Enables Stayers to Stay in Teaching

Component 1	Component 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	$p<t$
Enjoy working with	Work is rewarding	.77	.61	.16	.23	.70	.488

students							
Enjoy working with students	Flexible schedule	.77	.25	.52	.37	1.38	.172
Work is rewarding	Flexible schedule	.61	.25	.36	.35	1.00	.321
Enjoy working with students	Autonomy running classroom	.77	.18	.59	.26	2.2	.026
Work is rewarding	Autonomy running classroom	.61	.18	.43	.25	1.69	.096
Flexible schedule	Autonomy running classroom	.25	.18	.07	.33	.22	.822
Giving back to society	Enjoy working with students	.77	.21	.56	.33	1.7	.096
Work is rewarding	Giving back to society	.61	.21	.40	.33	1.19	.238
Flexible schedule	Giving back to society	.25	.21	.04	.29	.13	.892
Giving back to society	Autonomy running classroom	.21	.18	.03	.23	.15	.878
Enjoy working with	Enjoy subject	.77	.39	.38	.22	1.7	.093

students	matter						
Work is rewarding	Enjoy subject matter	.61	.39	.22	.27	.82	.414
Enjoy subject matter	Flexible schedule	.39	.25	.13	.49	.26	.793
Enjoy subject matter	Autonomy running classroom	.39	.18	.21	.29	.70	.487
Enjoy subject matter	Giving back to society	.39	.21	.17	.39	.43	.668

What Enables Stayers to be Satisfied in Teaching

Similarly, means plot for the components related to what enables stayers to be satisfied in their profession suggested that the mean for Satisfaction with school environment was the highest (.73), followed by Satisfaction with class size (.60). The lowest mean was for Support from parents (.45). Figure 2 shows the means plot for the five components.

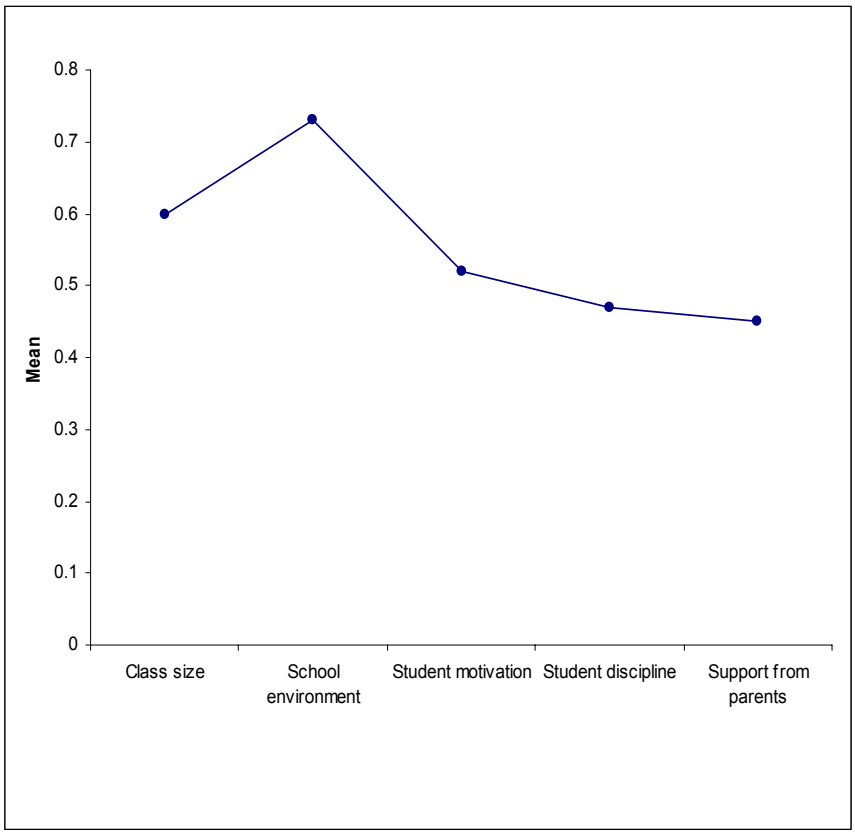

Figure 3. School/Class Characteristics that Enable Stayers to be Satisfied in their Teaching

One-way ANOVA results suggested that Student discipline (*M*=.52, *SD*=.50), was statistically significant with Class size (*M*=.61, *SD*=.49), *t* (44) =2.31, *p* =.025 and School environment (*M*=.61, *SD*=.44), *t* (44) = 9.37, *p* =.000; Student motivation (*M*=.46, *SD*=.49) was statistically significant with Class size (*M*=.61, *SD*=.49), *t* (44) = 4.03, *p* =.000 and School environment (*M*=. 61, *SD*=.44), *t* (44) = 4.02, *p* =.000; Support from parents (*M*=.45, *SD*=.49) was statistically significant with Class size (*M*=.61, *SD*=.49), *t* (44) = 5.689, *p* =.000 and Student discipline (*M*=.52, *SD*=.50), *t* (44) = 2.53, *p* =.000.

These results suggest that provided with a suitable school environment, appropriate class size, student discipline, student motivation and support from parents, stayers are more likely to express satisfaction with their current teaching jobs and tend to remain in teaching. Table 15a presents the descriptives and Table 15b presents the ANOVA results.

Table 15a

Descriptive analysis of What Enables Stayers to be Satisfied in Teaching

Component	Weighted *N*	Mean	*SE* (Mean)	*SD*
Class size	160,830	.60	.02	.49
School environment	160,830	.73	.04	.44
Student discipline	160,830	.52	.02	.50
Student motivation	160,830	.46	.02	.49
Support from parents	160,830	.44	.01	.49

Table 15b

Analysis of Variance between Components of What Enables Stayers to be Satisfied in Teaching

Component 1	Component 2	Mean 1	Mean 2	Mean Difference	*SE* difference	*t*-statistic	$p<t$
School environment	Class size	.73	.60	.05	.13	2.7	.106
Class size	Student discipline	.60	.52	.07	.03	2.3	.025
School environment	Student discipline	.73	.52	.21	.02	9.3	.000
Class size	Student motivation	.60	.46	.13	.03	4.0	.000
School environment	Student motivation	.73	.46	.26	.06	4.0	.000
Student discipline	Student motivation	.52	.46	.05	.05	1.0	.311
Class size	Support from parents	.60	.44	.16	.02	5.6	.000
School environment	Support from parents	.73	.44	.29	.04	6.3	.067
Student discipline	Support from parents	.52	.44	.07	.03	2.5	.015
Student motivation	Support from parents	.46	.44	.02	.03	.78	.438

Decision Trees for Stayers

Separate decision trees were constructed using the Weka software for each of the components for reasons why stayers stay in teaching and the reasons for their satisfaction in their profession. The dependent variables were categorical (0, 1) and the independent variables were both categorical and continuous. There were a total of 11 components for the two variables: Stay: Enjoy working with students, Work is rewarding, Flexible schedule, Autonomy, Giving back to society, and Enjoy subject matter; and Satisfaction: Class size, School environment, Student discipline, Student motivation, and Support from parents. The classification process yielded in three model outputs that were considered 'fit' for prediction and further interpretation. These were all under the variable Satisfaction with teaching: Student motivation, School environment, and Support from parents. Each of the decision tree models is discussed next.

Satisfaction: Student motivation

Overall, about 55% of the instances were correctly classified for the model development. The graphical representation shows that the best attribute that explained variation among Stayers' satisfaction with Student motivation was Age. Further, under the attribute Age, the value 47 was classified as a significant value in classifying the attribute further. This tree shows that those stayers who were younger than 47 years were more likely to be satisfied with Student motivation in school/classroom than those who were older than 47 years. Also, the two numbers in parentheses (e.g., 4.18.92 and 165.03 under Yes and 38.08 and 15.52 under No); represent the number of instances in the set

that were correctly/incorrectly classified by the node. Figure 3 presents the graphical representation.

Correctly Classified Instances	54.7%
Incorrectly Classified Instances	45.3%

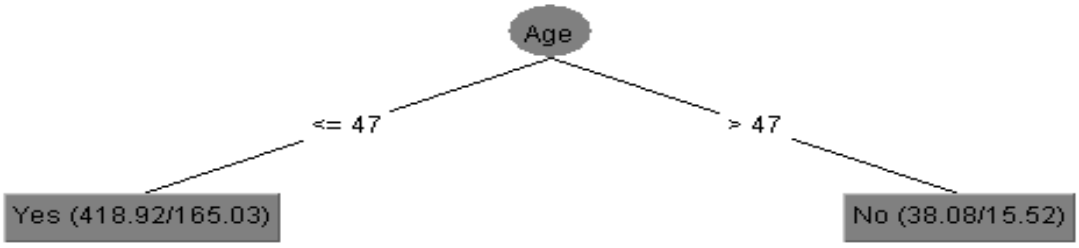

Figure 4. Decision Tree for Student motivation

Satisfaction: School environment

Overall, 73% of the instances were correctly classified for the model development. The best attributes in the order of significance that explained variation among Stayers' satisfaction with School environment were: Highest degree, Marital status (MS), BA Major, Age, and GPA. The first node of the model indicates that if the Stayers had a Highest degree less than one (below a bachelor's degree), they were more

likely to satisfied with the school environment than those greater than one (above a bachelor's degree). If the Stayers had a Highest degree greater than one and were married/cohabiting, they were likely to be satisfied with school environment and the node ends there. Further, in the second node, if the Stayers were single, did not have education as their major in bachelor's, and were younger than 32 years, they tended to be satisfied with school environment, however, if they were older than 32 years with a NORMGPA less than 237, they were likely to be satisfied with School environment but not so if their NORMGPA exceeded 237. The values under parentheses indicate the number of instances correctly and incorrectly classified at each node.

Correctly Classified Instances	73 %
Incorrectly Classified Instances	27 %

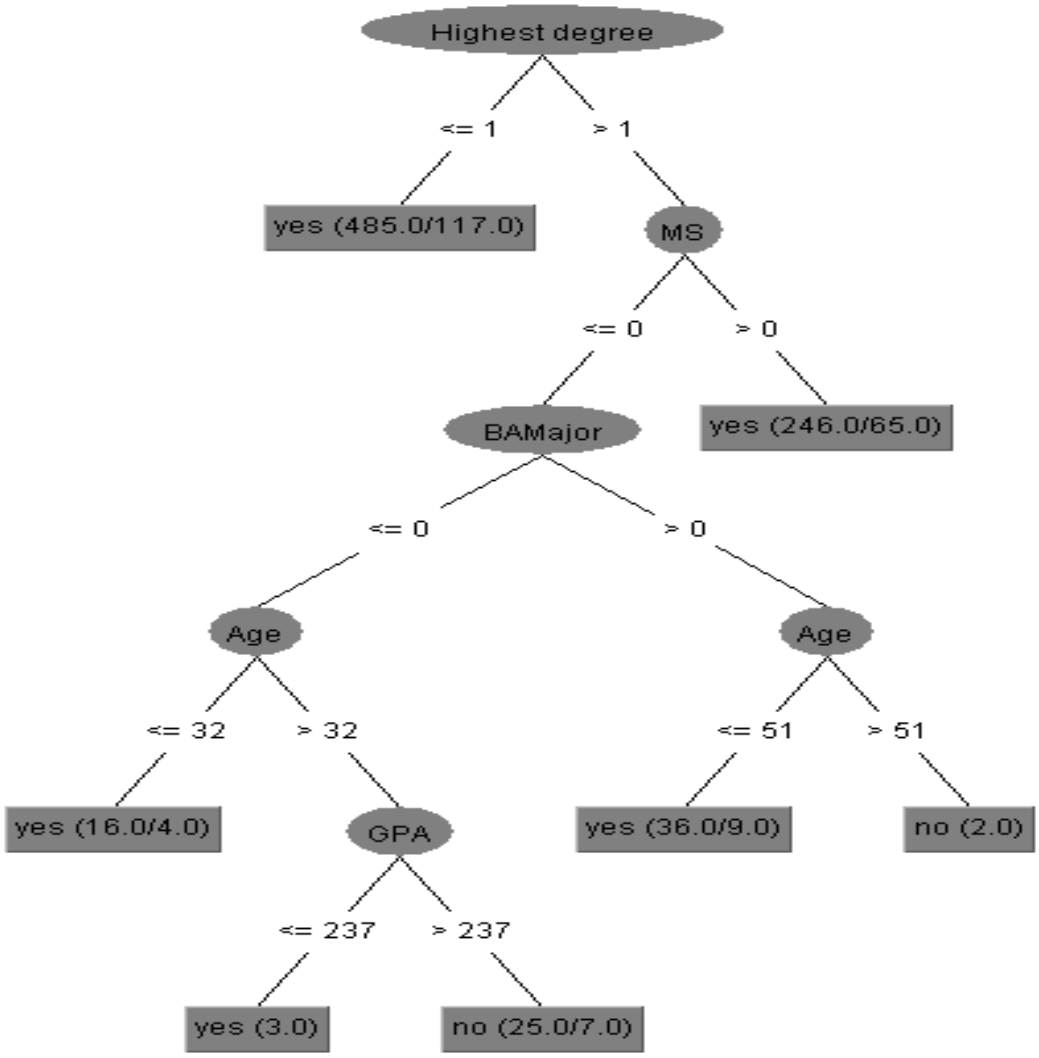

Figure 5. Decision Tree for School environment

Satisfaction: Support from parents

Overall, 58% of the instances were correctly classified for the model development. The best attributes in the order of significance that explained variation in among Stayers' satisfaction with support from parents were: Age, BA Major, and GPA.

The model shows that if the Stayers were older than 35 years, they were not likely to be satisfied with Support from parents and the classification node ends there. If the Stayers were equal to or younger than 35 years, then they were likely to be satisfied with Support from parents. If the Stayers did not have education as their major in bachelor's, they were not likely to be satisfied with Support from parents. However, when the Stayers had education as their major in bachelor's and a NORMGPA more than 272, they tended to be satisfied with Support from parents. The values under parentheses indicate the number of instances correctly and incorrectly classified at each node.

Correctly Classified Instances 58 %

Incorrectly Classified Instances 42 %

Figure 6. Decision Tree for Support from Parents

Summary

Weighted comparative descriptive analyses, frequencies, *t*-tests, One-way ANOVAs and decision tree models were presented in this chapter. The data were analyzed to ask research questions related to personal characteristics, beliefs, and perceptions of full-time public school Leavers, Non-teaching educators, and Stayers that make them to leave or stay in teaching.

Comparative descriptives and frequencies were used to capture the various personal characteristics such as age, marital status, gender, ethnicity, number of children under the age 18, NORMGPA, BA Major, and highest degree attained for the three groups. Reasons for leaving teaching for Leavers and Non-teaching educators were outlined as well as the jobs they went to were investigated. Low pay was considered as one of the major reasons for considering leaving teaching by Leavers, while Getting a job within education was cited as the main reason for leaving teaching by Non-teaching educators.

Student's *t*-tests were conducted for the three groups to analyze if higher ability individuals (those with higher NORMGPA) were more likely to stay in teaching and if with additional years of education past their bachelor's degree enabled their decision to stay in teaching. Results suggested that higher ability individuals were more likely to leave teaching (leavers). Further, the percentage of individuals who leave (leavers as well as non-teaching educators) and stay who have additional years of education past their bachelor's was not statistically significant. However, non-teaching educators did have

more advanced degrees in comparison to both the leavers and stayers. Among Leavers, majority of them opened their own business/self-employed in addition to joining the non-education related business/private/professional industry. Among Non-teaching educators, a majority of them became school counselors, in addition to taking up other non-teaching related jobs in the education system.

One-way ANOVAs were conducted to compare various aspects of job satisfaction among the three groups (i.e, Generally satisfied, Satisfaction with challenge of work, Satisfaction with fringe benefits, Satisfaction with further education, Satisfaction with job security, Satisfaction with pay, and Satisfaction with promotion). Overall, compared to Leavers and Non-teaching educators, Stayers were more likely to be generally satisfied with their current job/position in most aspects of their current job such as fringe benefits, challenge of work, further education.

Finally, beliefs and perceptions regarding staying and being satisfied with teaching for the Stayers were analyzed using ANOVAs and decision tree prediction models. Stayers were more likely to be satisfied with their profession when they had Autonomy in running their classroom, and Student discipline and Class size were not a problem. Support from parents and Student motivation were also important contributors the Stayers' level of satisfaction with teaching.

Decision tree models predicted that younger teachers (<47 years and <35 years respectively) were likely to be satisfied with Student motivation and Support from parents; those older than 32 years with a lower NORMGPA (<237), were tended to be

satisfied with School environment; but those with higher NORMGPA (>272) were likely to be satisfied with Support from parents.

5. Discussion

This study used secondary analyses on NCES's B&B dataset (93/03) to first compare the personal characteristics, followed by testing the mean differences between the Leavers, Non-teaching educators and Stayers in regards to their current job satisfaction levels and the beliefs and perceptions of the Stayers regarding their decisions to stay and be satisfied with teaching. Finally, decision tree models were constructed for the Stayers to analyze those predictors that were most suitable in determining their decisions to stay and be satisfied in teaching.

Comparative descriptives and frequencies helped to understand the personal characteristics of the three groups separately as well as understand the reasons why Leavers and Non-teaching educators left teaching and what kinds of jobs they took upon leaving teaching. Stayers were comparatively older than Leavers and Non-teaching educators (Alt, Henke, & Perry, 2001); compared to the other groups Leavers had a higher NORMGPA (Alt, Henke, & Perry, 2001; Podgursky, Monroe, & Watson, 2004). Contrary to research that found that teachers leave mainly for family/personal reasons (Henke, Zahn, & Carroll, 2001; Wayne, 2000 & Stinebrickner et al., 2003), pay was stated as the main reason for leaving teaching by Leavers. Getting a job within education was cited as the main reason by Non-teaching educators. A majority of Leavers took jobs

in the private sector/business, while a majority of Non-teaching educators chose school counseling as their profession within the K-12 education system.

Discussion by Research Questions

RQ1: Are higher ability individuals more likely to stay in teaching? Student's *t*-test was conducted to determine mean differences on NORMGPA for the Leavers, Non-teaching educators, and Stayers. Results suggested that Leavers had a higher mean NORMGPA compared to the Non-teaching educators and Stayers and were more likely to leave teaching. Longitudinal research conducted by Alt, Henke, & Perry (2007) showed similar results; work done by Podgursky, Monroe, & Watson (2004) on Missouri college graduates and public school teachers found that college graduates with above-average ACT scores tended not to select teaching, however, and if they did, the high-ability men as well as women were more likely to leave than their less talented counterparts. Research conducted by Goldhaber, Gross and Player (2007) suggested that the selectivity of a teacher's undergraduate institution (as measured by average ACT scores) was associated with their decision to exit teaching. This was particularly true for women, if their SAT scores increased by 100 points, their likelihood of leaving teaching increased by 29%. Similarly, research conducted on North Carolina teachers by Murnane & Olsen (1990) showed that salaries influenced duration of teaching much less for teachers with high test scores than for teachers with lower scores. Although, the salary comparisons of the three groups were not conducted in this study, it is likely that pay may play an important role in career decision-making by college graduates.

RQ2: Do individuals in the three groups with additional years of education past their bachelor's degree more likely to stay in education? Student's *t*-test was conducted to determine mean differences on Highest degree attained by the Leavers, Non-teaching educators, and Stayers. The results showed that the percentage of individuals who leave (leavers and non-teaching educators) and stay who have additional years of education past their bachelor's is not statistically significant. However, non-teaching educators did have more advanced degrees in comparison to both the leavers and stayers.

Stayers who have a master's or higher degree may aspire to remain in teaching in order to be able to teach better in their content area/s, get higher salaries as well as get promotion in their teaching responsibilities such as become lead teachers, and curriculum coordinators in their schools. For instance, Goldhaber, Gross and Player's study (2007) found similar results for teachers who obtained the National Board Certification were 90% more likely to stay and 18% less likely to transfer within the district. However, other studies have suggested that teachers with higher degrees were more likely to leave teaching (Boe et al., 1999 & Podgursky, Monroe, & Watson, 2004). Variation in results in these studies may be due to the fact that their data did not provide sufficient information to test this claim more precisely.

RQ3: Among the seven components of current jobs of leavers, non-teaching educators, and stayers, is one higher than the other in its rating? Means followed by one-way ANOVAs were conducted separately for each group to compare various aspects of job satisfaction (i.e, Generally satisfied, Satisfaction with challenge of work, Satisfaction with fringe benefits, Satisfaction with further education, Satisfaction with job security,

Satisfaction with pay, and Satisfaction with promotion). Leavers reported highest means for being Generally satisfied with their current jobs, followed by Satisfaction with challenge of work. For Non-teaching educators, the means were the highest for Satisfaction with job security, followed by Satisfaction with further education. Stayers reported highest means for the component Generally satisfied followed by Satisfaction with challenge of work. ANOVA for Leavers showed significant results between Generally satisfied and Pay; Non-teaching educators showed significance between Generally satisfied and Pay and Job security and Pay. Compared to Leavers and Non-teaching educators, Stayers were more likely to be satisfied with fringe benefits, challenge of work, and further education. These results generally support previous results of the main reasons why Leavers leave— pay (e.g., Ingersoll, 2003) followed by difficulty with students, parents, and/or administrators (e.g., Linker, 1992; Choy et al., 1993). However, since this study did not analyze salaries of the three groups, any further implications of the results can't be made. However, when leavers leave teaching, they take up jobs in the private business/self-employed, and were likely to be satisfied with both pay and other aspects of the job.

These results resonate with those for Non-teaching educators, who indicated to work within education as the main reason for leaving teaching, followed by Low pay in teaching. In their current positions within the education system they appear to get paid higher than teaching. They reported feeling more secured in their current jobs. Nation-wide salary comparisons of Non-teaching educators (e.g., superintendents, assistant superintendents, principals, assistant principals, school counselors, librarians/media

specialists and subject area supervisors) with those of teachers showed that teachers' salaries varied in the ratio of 2.4, 2.1, 1.8, 1.5, and 1.1, 1.1 and 1.5 respectively (Educational Research Service, 2006). This also suggests that although Non-teaching educators are leaving teaching, they are staying within the education system taking up administrative jobs for better pay, and job security among other reasons.

Stayers, compared to leavers and non-teaching educators, tended to be more satisfied with most aspects of their current jobs such as challenge of work, fringe benefits and further education. Research by Henke, Zahn, & Carroll (2001) and MetLife survey (2006) have consistently shown that compared to all other professions, teaching remained one of the most stable as well as the most satisfying. Teachers have expressed satisfaction with Challenge of work which may mean that those who have higher degrees are satisfied with their additional responsibilities at their schools.

RQ4. Among the various components each for school/class characteristics, is one higher than the other in its rating for stayers to enable them to stay as well as be satisfied in teaching? Means plot, One-way ANOVAs and Decision tree models were made for Stayers to examine their beliefs and perceptions regarding staying and being satisfied in teaching. First, a mean plot was drawn for the six components related to staying in teaching— Stay- Enjoy working with students, Work is rewarding, Flexible schedule, Autonomy, Giving back to society, and Enjoy subject matter. Another means plot was drawn for the five components related to being satisfied in teaching— Satisfaction- Class size, School environment, Student motivation, Student discipline, and Support from

parents. ANOVAs were conducted for each of the components to understand the aspects of staying and being satisfied in teaching for the group. Finally, decision trees were constructed to show the thought processes behind the decision of staying and being satisfied in teaching.

The first means plot showed Enjoy working with students receiving the highest score, followed by Work is rewarding. The lowest score was for Autonomy running a classroom. The second means plot showed School environment with the highest score, followed by Class size. First ANOVA to analyze staying in teaching showed significant results between Enjoy working with students and Autonomy running a classroom. Second ANOVA to analyze satisfaction with teaching showed significant results between Student discipline and School environment; Student motivation with Class size, and School environment; and Support from parents with Class size, and Student discipline. These results suggest that working conditions such as class size, and school environment may play a role in keeping the teachers in their professions (Choy et al., 1993).

Researchers agree that working conditions affect not just current job satisfaction, but satisfaction with teaching as a career (Linker, 1992; Choy et al., 1993; Perie, Baker, & Whitener, 1997). Intrinsic factors like student motivation, class size, and student discipline inform teachers' feelings about whether or not students have learned something as a result of their teaching, while indicating if they have autonomy over their class environment/students and affect teacher satisfaction (Lee, Dedrick, & Smith, 1991; Boe & Gilford, 1992). Boe & Gilford (1991) further opined that professional autonomy

enhances the attractiveness of the teaching profession as a career choice and improves quality of classroom teaching and practice. Extrinsic factors like support from parents, students, and administrators are also associated with teacher satisfaction (Bobbitt et al., 1994; Choy et al., 1993).

Decision tree models showed that younger teachers (<47 years and <35 years respectively), were likely to be satisfied with Student motivation and Support from parents; teachers older than 32 years with a lower NORMGPA (<237), were less likely than those younger than 32 years (>237 NORMGPA) to be satisfied with School environment; but those with higher NORMGPA (>272) were likely to be satisfied with Support from parents.

These results of teachers' beliefs and perceptions of their jobs will enable researchers and policy makers to understand why teachers leave teaching because they are dissatisfied with some aspect/s of their job. The decision trees will help identify ways to alter negative types of teacher turnover and attrition related to intrinsic and extrinsic job aspects.

Implications

Teacher attrition is a serious issue that has caused considerable interest in the education profession. For the past three decades or so, researchers and policy analysts have taken a deeper interest in predicting that shortfalls of teachers will result from two converging demographic needs- increasing student enrolments and increasing teacher

retirements- that would lead to high teacher attrition and problems in staffing schools with qualified teachers. In addition to retirement, there are several contributing factors associated with personal characteristics of teachers (i.e., age, gender, marital status, number of children, education, ability, etc) that are enablers of their intentions. My data analyses suggested that in order to "advance" in public education, many teachers leave teaching to take up non-teaching jobs/positions in education (e.g., school counselors, librarians/media specialists, principals, assistant principals, etc). Study relevant literature review and my analyses suggest that higher ability individuals are more likely to become Leavers and tend to cite pay as one of the reasons for leaving teaching. Non-teaching educators leave teaching to "advance" in their careers for increased pay and job security.

Data analyses also suggested that close attention should be paid to the beliefs and perceptions of Stayers' working environments— both intrinsic as well as extrinsic. This study has shown that the class/school characteristics may effect teachers' decision to stay and/or be satisfied in their profession.

These results also suggest that we look closely at the data and the definitions used to define teacher turnover and attrition to clearly understand and analyze the attrition issues to make policy decisions at all levels. Regardless of how small the groups of Leavers and Non-teaching educators, the end result is that a teacher leaves the profession and the educational system loses and needs to replace an educator, which some estimates say run into billions of dollars a year in recruitment and training. Understanding the reason/s why a teacher leaves (either due to pay, working condition, or due to

personal/family reasons) is very important from the standpoint of constructing effective teacher retention policy.

Researchers like Ingersoll (2003) used SASS/TFS to study the reasons behind beginning teacher attrition and found reasons of low pay, fringe benefits and working conditions as the main reasons of teacher attrition. Although, I did not investigate pay and how it may contribute to the job-related decision making process for the three groups, it appears from my analyses that pay, fringe benefits, and working conditions can contribute greatly in exit plans of leavers and non-teaching educators. Also, it should be noted that Ingersoll's sample (54,000) did not track the 'leavers' beyond the study period (1993/94 and 1994/95) and included public and private, full time and part-time teachers with no mention of non-teaching educators within the sample.

Recommendations for Future research

Although, this study differentiated Leavers from Non-teaching educators and Stayers and analyzed their personal characteristics and beliefs and perceptions about their current jobs to understand why they left teaching, where they went and what made the Stayers stay and be satisfied in teaching, it doesn't compare salaries or investigate its role on career decision-making. Salary plays an important role in career choices, entry and exit decisions of college graduates, especially with a longitudinal dataset such as B&B, therefore, a future study using comparable salaries of the three groups will provide a deeper insight into the study.

Additionally, the study did not differentiate certain other aspects of school characteristics such as the sector/location of school (i.e., urban, suburban, and rural) that would have helped in a better understanding of where the majority of Leavers and Non-teaching educators came from and what were their specific issues/reasons behind leaving teaching.

Being a quantitative study, it was not possible to get an in-depth understanding of the contextual factors behind the beliefs and perceptions of the stayers. Although, the decision tree model enabled to partition several aspects of beliefs and perceptions of staying and being satisfied in teaching for the stayers, it was limited by the variables that were chosen and provided by the researcher. Categorical variables to 'measure' *why* stayers stayed and were satisfied with teaching were very limiting in their overall interpretation. Perhaps a mixed methodology with personal interviews with leavers, non-teaching educators and stayers in future will provide a much richer description of the reasons *why*.

A more robust B&B dataset with fewer challenges of variable names, incorrect data entries, repetitive variables and additional open-ended questions to ask *why* they left teaching will greatly help researchers to use the dataset more widely.

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