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EXAMINATION OF THE FINANCIAL COSTS OF
TEACHER TURNOVER IN MID-SIZED URBAN SCHOOL DISTRICTS

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP
AND POLICY STUDIES

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As the new millennium approached, I made some life-changing decisions that have brought me to where I am today. For the past decade, I feel like I have been on a journey – of discovery and revitalization – and the fork in the road is slowly approaching.

The journey began when I decided to wind down a successful business and technology career and explore my love of teaching. I spent the first few years establishing my teaching career. Those first years were full of uncertainty – and promise. I worked at some wonderful schools like Bixby Middle School and Rogers High School. I met some wonderful teachers like Barbara, Marilyn, Jean, and Mandy. The first two were wonderful mentors who taught me that teaching could be so much more than just pages in a textbook. The second two gave me insight into where I could take my teaching. Along with great teachers, I was fortunate enough to work under a great administrator. Lyda opened my eyes to all the possibilities that exist in the world of education.

As the journey progressed, I decided to take a turn in a different direction. I returned to school for a masters in teaching – because I had no degree related to education and felt that was an academic credential I needed. At Northeastern State University, I met two wonderful professors. Sue Ellen helped to lay the foundation for my love of research. She instilled a passion for teaching that I didn't know existed. Renee taught me how to put that passion into practice. Both challenged me

to greater heights. I thought they were showing me a *window* but unbeknownst to me they were also showing me a *door* as well.

Because I had changed directions once, I found it easier to make another direction change – I thought. It seemed like the right opportunity at the right time to pursue a doctoral degree. Fast forward four years and here I am – finishing my doctorate of education. It has been a bumpy ride – but I have enjoyed every time of it. The adage "sometimes you can't tell a book cover by its cover" aptly describes my doctoral experience. My lack of experience as an administrator was seen as a deficiency by professors and cohort members alike, but those who got to know me met a passionate, energetic, ambitious and multi-faceted student. I would like to thank fellow cohort members Lyda, Geoff, Brian, Janet, Kartina, Marilyn, Tammie, and Patrina for all the friendship and support they provided along the way. I would also like to thank my teacher Beverly for always being a sounding board and providing a shining light.

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Abstract

It is estimated that 50% of beginning teachers leave the profession within the first five years on the job (Murnane, Singer, Willett, Kemple, & Olsen, 1991; Colbert & Wolff, 1992; Ingersoll, 2003b; Schlechty & Vance, 1981). When teachers depart, they take with them their knowledge of instructional techniques, students' learning styles, and professional development training (Chuong, 2008).

Teacher turnover creates many problems. The annual recruitment and placement of teachers is not only time-consuming and labor intensive, it is a costly burden on public school administrators (Boe, Bobbitt, Cook, Whitener, & Weber, 1997). Furthermore, teachers hired to replace the teachers who have left often do not have the teaching experience and qualifications of the teachers they are replacing (Rollefson, 1993), and the induction of replacement teachers disrupts instructional programs until the new teachers are assimilated to the culture, curriculum, and school community (Boe, Bobbitt, & Cook, 1997).

In the past ten years, educational researchers have been trying to put a price on teacher turnover using various business and educational models. Benner (2000) put the cost between $329 million and $2.1 billion per year – for Texas alone. The Alliance for Excellent Education (2005) estimated the national yearly cost of replacing public school teachers between $2.2 billion and $4.9 billion. Finally, the National Commission of Teaching and America's Future put the national cost at $7.3 billion a year (NCTAF, 2007).

This study examined the various fiscal components of teacher turnover as they related to a mid-sized urban school district in the Southern United States. The purpose of this study was to validate a 4-component turnover model by calculating the financial costs of teacher turnover in an urban school district. The turnover costs were examined in four areas – separation costs of the departing teacher, hiring and training costs of the new teacher, and the development of performance productivity in the new teacher.

Utilizing terminated teacher data from school year (SY) 1999 through SY 2008, the yearly turnover costs ranged from $3.2 million in SY 2003 to $5.7 million in SY 2005, with an average yearly cost of $4.1 million. This translated into per-leaver costs ranging from $10,000 to $18,300. In addition, the yearly turnover rates averaged 9.38%, with the rates ranging from 7.55% in SY 1999 to 11.05% in SY 2004.

The future projections of yearly turnover costs for SY 2010 through SY 2012 were $4.5 million, $4.67 million, and $4.75 million respectively. In addition, the projections for yearly turnover rates for the same years were 10.60%, 10.75%, and 10.90% respectively. These calculations were determined using the Trend Line Analysis tool in Microsoft Excel. The implications are clear. The increase in teacher turnover costs also increases allocations for recruitment and hiring teachers (Spiedel, 2005).

CHAPTER 1

INTRODUCTION

Background

Each fall, bells ring in schools across this nation to mark the beginning of another academic year. As students return from their summer vacations, many of their teachers do not return to the classrooms in which they taught last year. Every school day, nearly a thousand teachers leave the field of teaching with another thousand changing schools, many in pursuit of better working conditions – and these figures do not include the teachers who retire (NCTAF, 2003).

A highly qualified and committed teacher can substantially enhance a student's learning, while having a series of ineffective teachers can seriously retard that same student's progress (McCaffrey, Lockwood, Koretz & Hamilton, 2003). Therefore, staffing all classrooms with effective teachers should be the highest priority for educational policymakers and practitioners at a time when schools must educate students to be productive citizens of a knowledge-based society.

The exit of teachers from the profession and the movement of teachers to better schools are a 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). Reducing teacher attrition and teacher mobility also has potentially important implications for school finance (Feng, 2006). Searching for and hiring new teachers

is an expensive proposition. A conservative national estimate of the cost of replacing public school teachers who have dropped out of the profession is $2.2 billion a year (Alliance for Excellent Education, 2005). If the cost of replacing public school teachers who transfer to other schools is added, the total reaches $4.9 billion every year. For individual states, cost estimates ranged from $8.5 million in North Dakota to $56.3 million in Oklahoma to $504.9 million for Texas (see Table 1).

Many analysts believe that the teacher turnover price tag is even higher due to the fact that hiring costs vary by district and sometimes include signing bonuses, subject matter stipends, and other recruiting costs specific to hard-to-staff schools. Others believe that the cost of the loss in teacher quality and student achievement should also be added to the bill (Benner, 2000). The actual costs of replacing teachers are not as readily apparent because these costs are not included in a single line item of the superintendent's annual budget (Shockley, Guglielmino, & Watlington, 2006).

However, recognizing the crucial role that teachers play in the students' learning does not lead easily to policies and practices that "ensure each school and classroom will be staffed by an excellent teacher" (Johnson, 2006, p. 2). Many teaching positions remain vacant for months at a time, leaving students to contend with a series of unprepared substitute teachers. Other classrooms are staffed with teachers who are ineffective for a variety of reasons – insufficient training, overwork, low morale, inadequate curriculum and resources (Darling-Hammond, 1997; Goldhaber & Brewer, 2000; Laczko-Kerr & Berliner, 2002; Weglinksky,

TABLE 1: U. S. DEPARTMENT OF LABOR ESTIMATES
Source: Alliance for Excellent Education (2005)

STATE	LEAVING	TRANSFER	TOTAL	STATE	LEAVING	TRANSFER	TOTAL
AK	$7,920,331	$10,611,317	$18,531,647	MT	$5,525,286	$8,780,211	$14,305,497
AL	$28,969,359	$41,987,258	$70,956,618	NC	$84,497,347	$104,067,934	$188,565,281
AR	$14,361,155	$23,725,427	$38,086,582	NE	$11,166,635	$15,654,627	$26,821,262
AZ	$44,026,392	$44,379,821	$88,406,214	ND	$3,563,447	$4,965,650	$8,529,097
CA	$206,213,616	$249,518,976	$455,732,592	NH	$7,299,916	$10,220,329	$17,520,245
CO	$41,635,928	$34,919,145	$76,555,073	NJ	$72,633,486	$77,928,873	$150,562,359
CT	$31,359,651	$35,965,870	$67,325,521	NM	$12,254,139	$15,632,756	$27,886,896
DC	$6,017,796	$6,871,872	$12,889,668	NV	$12,830,603	$27,660,052	$40,490,655
DE	$4,841,971	$9,162,186	$14,004,157	NY	$210,614,387	$153,046,225	$363,660,611
FL	$78,790,723	$112,854,050	$191,644,774	OH	$110,627,905	$95,816,606	$206,444,511
GA	$81,736,892	$103,609,330	$185,346,221	OK	$23,047,221	$33,258,194	$56,305,415
HI	$15,607,820	$8,287,407	$23,895,228	OR	$19,354,114	$27,179,712	$46,533,826
IA	$20,144,334	$30,013,404	$50,157,738	PA	$88,432,504	$90,358,337	$178,790,841
ID	$8,530,747	$14,507,442	$23,038,188	RI	$5,592,175	$10,898,365	$16,490,540
IL	$78,961,817	$145,106,049	$224,067,866	SC	$30,551,316	$44,026,758	$74,578,074
IN	$26,843,846	$47,469,200	$74,313,045	SD	$5,328,932	$7,569,478	$12,898,410
KS	$22,649,585	$28,669,378	$51,318,964	TN	$32,378,057	$55,472,856	$87,850,913
KY	$18,010,556	$44,526,937	$62,537,493	TX	$214,509,448	$290,407,937	$504,917,385
LA	$30,776,968	$46,065,876	$76,842,844	UT	$18,203,284	$14,944,657	$33,147,941
MA	$56,049,714	$59,762,606	$115,812,320	VA	$62,031,275	$85,074,850	$147,106,125
MD	$44,644,190	$69,365,028	$114,009,218	VT	$6,715,307	$5,773,916	$12,489,223
ME	$10,606,424	$10,318,166	$20,924,590	WA	$38,120,738	$36,889,448	$75,010,187
MI	$67,056,880	$111,971,866	$179,028,746	WI	$25,093,968	$38,448,836	$63,542,804
MN	$39,579,507	$53,188,209	$92,767,715	WV	$6,677,984	$18,649,644	$25,327,629
MO	$43,169,611	$68,474,496	$111,644,106	WY	$4,026,798	$5,587,750	$9,614,549
MS	$18,492,272	$20,159,747	$38,652,018	**Total**	**$2,158,074,356**	**$2,709,805,065**	**$4,867,879,421**

2002). Rapid turnover of successful teachers imposes enormous costs, both financial and organizational, on the schools and those who teach and learn there.

This chapter describes the problem of teacher turnover and the need for this study, including the problem statement, purpose of the study, conceptual framework, significance of the study, limitations and delimitations, definition of terms, and overview of the method.

Statement of Problem

School staffing problems are primarily due to large numbers of teachers leaving the profession (Ingersoll, 2003b). This *revolving door* of teachers, rather than a shortage of teachers, is a major factor behind school staffing problems (Ingersoll, 2001a, 2003b; Ingersoll & Smith, 2003). Approximately a third of America's new teachers leave teaching during their first three years of teaching and almost half leave during the first five years (NCTAF, 2003; Ingersoll, 2003b). Teacher turnover is "almost a third higher in low-income urban school districts" (NCTAF, 2007b, p. 28) and the highest rate of teacher turnover "occurs in schools where 75% or more of the student body is eligible for free and reduced price meals" (SECTQ, 2003, p. 2). The cost of retaining public school teachers is an issue of concern in education circles. In 2007, NCTAF issued a report that estimated teacher turnover at a staggering seven billion dollars. "An ordinate amount of their time is consumed by the constant process of hiring and replacing beginning teachers who leave before they have mastered the ability to create a successful learning culture for their students" (NCTAF, 2007b, p. 2).

Researchers have acknowledged that turnover is a problem and there needs to be a model to measure its financial costs Several researchers have attempted to create a model to

define turnover (Alliance for Excellent Education, 2005, ACORN, 2003; Bliss, 2001; Cascio, 1991; HR Chally Institute, n.d.; Milanowski & Odden, 2007; Seavey, 1999; Shockley, Guglielmino & Watlington, 2006; Smith & Watkins, 1978). The model in this study combined many of the components of previous models and added costs that have not been addressed in previous studies. Many studies have been criticized for only using estimates when actual data was available (Benner, 2000; ACORN, 2003). The validity of this model and the resulting determination of the costs should prove that the teacher turnover must be accurately calculated based on established criteria.

Purpose of Study

The purpose of this study was to validate a 4-component turnover model by calculating the financial costs of teacher turnover in an urban school district. Because it takes time, energy and money to recruit, hire and train replacement teachers, school districts need to understand the source of these costs, and in our economic times, understand how they impact the school district budgetary bottom line. By calculating a precise measurement of teacher turnover costs, districts can more adequately assess the effect of such turnover, and examine the cost-effectiveness of implementing interventions designed to reduce turnover.

This study is guided by the following research questions:

- Research Question 1: What are the financial costs associated with teacher turnover in an urban school district in a mid-sized Southern city between school year (SY) 1999 and SY 2008?

- Research Question 2: To what extent have these costs changed over this period?

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- Research Question 3: What are the predicted teacher turnover costs in SY 2010 through SY 2012?

Conceptual Framework

An analysis of how the human capital theory, as defined by Nobel Prize winner and University of Chicago economist Gary Becker, relates to teacher turnover helps to put this issue into perspective. To understand human behavior, researchers continuously analyze why humans make life-changing decisions that impact their quality of life, in addition to the rationale behind these decisions. Education is fundamentally important to society, both as an institution and as a process. Schools play a critical role by helping shape the social, economic, and political aspects of our culture (Gardner, 2006). Teachers are similarly important given that the quality of an educational institution is primarily determined by the quality of its teachers.

Teaching has features that make it uniquely attractive as a profession (Lortie, 1975), and as a career offers "opportunities for services and for personal satisfaction which are equaled by very few professions" (Gould & Yoakam, 1947, p. 7). Despite its importance to society, the teaching profession is not as attractive a career choice to talented, ethical, and intelligent young people as other professions that offer higher salaries and degrees of social status. Becker's (1964) human capital theory, which evolved into Grissmer and Kirby's (1987) teacher attrition theory, may help explain why.

The original commitment between the teacher and the school district regarding a teaching position is predicated on prevailing information and circumstances (Grissmer & Kirby, 1987). The key to understanding teacher turnover is to recognize that a change has

occurred that causes a reversal of the original decision. According to Grissmer and Kirby (1987), the fundamental tenet of the human capital theory of occupational choice is that "individuals make systematic assessments of the net *monetary* and *non-monetary* benefits from different occupations and make systematic decisions throughout their career to enter, stay or leave an occupation" (p. 10). The **monetary** benefits include the stream of likely income resulting from entry into a given profession, likely promotion opportunities and the value of health, life, and retirement benefits. The **nonmonetary** benefits within an occupation include working conditions, support of coworkers and superiors, compatibility of hours and schedules with family and leisure needs, availability of adequate materials and equipment, and in the teaching profession, such factors as the learning attitudes of students and parental support.

In simple terms, this theory posits that individuals either choose to enter or change occupations to "maximize their net returns, taking account of both costs of training and stream of benefits" (Grissmer & Kirby, 1987, p. 10). Teaching salaries have consistently been lower than salaries of other professions over the last few decades (Harris & Adams, 2005) with pay raises minimized by inflation. This may be one reason that some prospective teachers weigh the pros and cons before becoming teachers and either never enter the teaching profession at all or leave shortly after beginning their careers.

Grissmer and Kirby (1991) tested their teacher attrition theory based on whether from one school year to the next a teacher continued in the same teaching position, moved to a teaching position in a different school district, or left the profession altogether. The literature on teacher turnover has consistently shown a bimodal curve: most of those who

leave in any given year are either disillusioned beginners with less than five years in the classroom or 30-year veterans who are ready to retire (Tye & O'Brien, 2002; Shen, 1997; Grissmer & Kirby, 1991). As an individual stays in a profession, he or she accumulates human capital that translates into wage premiums. This is one of the main reasons why moves are much more likely early in the career rather than mid-career because the greater amounts of specific capital that one accumulates with age or experience tend to act as barriers to leaving the occupation.

A major limitation of human capital theory is its assumption that an individual has perfect information about salary, benefits, and the nonpecuniary aspects of the job. In reality, the process of finding and accepting a job is conducted in an environment of uncertainty. The prospective employee and the hiring employer both have incomplete knowledge of each other and other employment alternatives. Early turnover can then be explained as resulting from new information regarding the costs and benefits of the current job versus alternate jobs. One can portray the job as being characterized by two classes of attributes: *search* characteristics, which can be observed without actually experiencing the job, and *experience* characteristics, which become evident only after experience on the job. Examples of **search** characteristics are wage, type of neighborhood, type of school, benefits; while examples of **experience** characteristics are types of students, the workload, time taken for extracurricular activities, and support from colleagues and principals. The acceptance of any job is conditional; if the person finds the value of the experience characteristic below some critical level, he or she will quit. This is easily extended to the employer also. If the

teacher's performance or character turns out to be unacceptable, the school will replace the teacher.

The human capital theory interprets the decisions of people whether to stay or leave their profession; for example, the greater the accumulation of specific human capital, the lower the probability of turnover. The more complex the initial training and the longer an individual has held a position, the less likely leaving is seen as a plausible option (Al Kaabi, 2005). This is why a doctor, for example, is unlikely to change professions and why a teacher who remains in the classroom past the initial years is less likely to leave the profession with each additional year.

In addition, higher rates of turnover during the first few years of teaching are not the result of a single factor but tend to result from the confluence of several different factors. Interdistrict and interstate mobility of teachers is high for younger teachers, because they often accept first teaching jobs paying lower salaries, with bad teaching assignments, and in less desirable locations, but once they gain experience then seek and find better paying teaching jobs, with better assignments, and in more desirable locations. Once there many teachers stay throughout their careers.

Individuals may also leave early in their careers because of a mismatch between original expectations and actual experience as teachers, arising because individuals enter employment commitments with incomplete information. As more complete information gained from teaching experience reveals a mismatch, transfers to other occupations or to nonteaching jobs within education are generally easier at this early phase of the career, as salaries and debt obligations are lower, and investment in occupation- and location-specific

human capital is not as high as at later career points. The bottom line according to the human capital theory is that a person will make decisions to leave a job or career based on how much he or she has invested in it – in effect, weighing the benefits and costs involved in making a change (Kirby & Grissmer, 1993; MacDonald, 1999).

<div align="center">**Significance**</div>

In 2007, the National Commission of Teaching and America's Future (NCTAF) created a teacher turnover cost calculator after an extensive national study. Based on a national average school leaver rate of 16.5%, NCTAF provided schools and districts with a way to estimate their turnover rate based on the number of teachers who left. However, the organization warned that this estimate should only be a "starting point for the discussion" (NCTAF, 2007a, ¶ 1).

Using the 245 teachers who left in SY 2008 from the school district in this study as an example, the NCTAF Cost Calculator estimated district costs of $2,143,750 – based on a per-leaver cost of $8,750 –and school costs of $5,880,000 – based on a per-leaver cost of $70,000 –for a total of $8,023,750. The district costs were calculated based on preset costs established by the author: $1,600 for recruitment, $2,150 for hiring incentives, $700 for administrative processing, $600 for induction, and $3,700 for professional development. However, the $70,000 for school costs were not explained. This estimation is a generic calculation without acknowledging the impact of regional economic conditions, school and district size, socioeconomic status, and cultural diversity.

This study takes the process further by providing a realistic model to accurately calculate the costs of teacher turnover by examining the individual costs attributable to

teacher turnover in the areas of separation costs, hiring costs, training costs, and performance productivity. Using the proposed **Tulsa Turnover Model** (Appendix A), school districts are able to calculate and analyze the true costs of teacher turnover.

Limitations

This study does not explore the conditions or reasoning behind a teacher's decision to leave the school or district nor address the professional expectations of teachers by building principals. The results of this study are limited to one mid-sized urban school district in the Southern United States. This researcher hopes the results of this study can be generalized to other similar urban districts around the country, If that is not possible, then maybe themes may emerge that may have relevance for other similar districts.

Delimitations

The sample population was limited to certified teachers employed by Tulsa Public Schools (TPS) between SY 1999 and SY 2008. The current study focused only on the issue of teacher turnover from a fiscal standpoint, and not on teacher quality. The research methods used in this study are not intended to determine the causes of teacher turnover, but only to determine what financial costs comprise the calculation of teacher turnover.

Definition of Terms

Only recently has the study of teacher turnover embraced a more comprehensive understanding of mobility (Plecki, Elfers, Loeb, Zahir, & Knapp, 2005). Three major categories define the movement of the teacher force: *stayers*, teachers who stay in the same school and in the same position; *movers*, teachers who move to other schools in the same

district, or to other districts; or *leavers*, teachers who exit the teaching profession, either temporarily or permanently.

Teacher *turnover* consists of teachers employed in a specific position one year but not the next. Turnover can be due to retirement, career changes, or termination (Herbert & Ramsey, 1999). It consists of *attrition* – teachers who leave teaching for reasons other than retirement or promotion – and *migration* – teachers who move from school to school or district to district (Grissmer & Kirby, 1987; Ingersoll & Smith, 2003). For the purpose of this study, *turnover* is defined as a teacher who leaves his or her current position and must be replaced.

Induction is a program implemented by a school district that spans one to three years to assist *novice teachers* – those with five or fewer years of teaching experience, regardless of the number of schools in which they have taught (Ingersoll & Smith, 2003; Merseth, 1992) – in achieving a level of comfort and security in dealing with everyday problems and issues as they adjust to the demands of teaching (Breaux & Wong, 2003). Induction consists of *mentoring* – a program established by a school, which assigns an established veteran teacher to assist a novice teacher with the realities of teaching (Breaux & Wong, 2003) – and *orientation* – training to learn "how we do things around here", focusing on the community, school district policies and procedures, the curriculum, and the school (Skinner, 2001, ¶ 3). In a *formal* learning environment the professional development department sets the goals and objectives, while *informal* learning means the learner sets the goals and objective (Cofer, 2000).

Summary

McCreight (2000) argued that teacher turnover is the largest single factor determining demand for additional teachers in the United States – and it is costly. The latest estimate puts the national turnover rate at 16.8% (NCTAF, 2007a). Ingersoll (2002a) asserted that "as many as 33% of new hires leave teaching altogether in their first three years, and 46% leave in the first five years" (¶ 8). An average of almost 330,000 teachers out of a teaching force of almost 2.5 million teachers leaves their schools of employment annually (U. S. Department of Education, 2003). Ingersoll (2002b) described it as a "bucket rapidly losing water because of holes in the bottom. Pouring more water into the bucket will not be the answer if the holes are not first patched" (¶ 10).

Overview of Method

Using terminated teacher data from Tulsa Public Schools and conversations with district staff that handle teacher employment tasks, the *Model* was developed to calculate the costs of turnover based on salaries and timelines needed to perform Human Resources, Payroll, Benefits, Information Systems and Professional Development tasks related to adding teachers to and removing teachers from the district database. Research question one was addressed by populating the *Model* and calculating the yearly turnover costs. Using the *Model*, a graphically-based analysis was created and the yearly turnover rate was calculated to address research question two. Trend analysis was utilized to address research question three in order to predict the future costs and rates of teacher turnover for the district.

Organization of Study

      This dissertation is organized into five chapters. Chapter One includes the overview of the problem being addressed in the study, problem statement, purpose of the study, research questions, and operational definitions. An extensive review of the relevant literature is included in Chapter Two. Chapter Three includes the design, context, methodology, data collection procedures, and organization of the study. Presentation of the data and data analysis are discussed in Chapter Four. Chapter Five includes the summary, conclusion, implications and recommendations pertaining to the research.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

This review of literature was divided into five significant areas of teacher turnover. The first area was the *importance of the teacher*. Stronge and Tucker (2000) stressed that the "single most influential school-based factor is the teacher" (p. 48). According to a study by the U. S. Department of Education (2000), students in high-minority and high-poverty schools are in desperate need of high-quality teachers if their achievement levels are to improve. For this reason, it is extremely important to have qualified teachers in every classroom. The next area examined was the *exodus of teachers*. The number of teachers leaving for other reasons is three times larger than the number retiring (NCTAF, 2003). Teaching has become a revolving door through which a third of all teachers (approximately a million teachers) flow in and out and where 90% of new hires are replacements (Ingersoll, 2001a; NCTAF, 2003; Darling-Hammond, 2003). Teacher turnover affects the quality of teachers, restricts planning and program continuity, increases allocations for recruitment and hiring, and impedes student learning (Spiedel, 2005).

Third, the *history of teacher turnover* was chronologically examined. Teacher turnover has been a topic of discussion since the National Education Association (NEA) identified it in the 1920s. It is important to examine the history of teacher turnover to determine where the issue of teacher turnover has evolved and how we have addressed the problem. The fourth area was the *financial impact of teacher turnover*. A typical district

allocates 80% of its budget to fund personnel costs (Thompson & Wood, 2008). "Education

is a labor-intensive endeavor, and districts must spend time and money to understand the

current state of their personnel and in forecasting the future state of their personnel" (Huff,

2002, p. 18). Of the total number of teachers not returning to schools, more than 173,000 are

leaving the profession altogether, costing the nation about two billion dollars in replacement

costs. For some districts the amount of monies spent can have a crippling effect on their

ability to provide a quality education to their students.

The final area examined in this literature review was the *measurement of teacher*

turnover costs. Research has shown that teacher turnover annually costs millions – and

sometimes billions – of dollars. Losing a valuable teacher who has experience is part of the

formula. Hiring the replacement is necessary to provide continuity. Training the new teacher

provides a basis in the investment school districts must make. Whether you agree with

Breaux and Wong's (2003) estimate of $50,000 to replace a teacher or Benner's (2000)

estimate of 30% of the leaver's salary, it is important to understand the composition of these

costs.

This chapter provides an extensive review of the relevant literature related to teacher

turnover, including the importance of the teacher's role, exodus of teachers, history of

teacher turnover, financial impact of teacher turnover, and measurement of teacher turnover

costs. The importance of this review is to understand how other studies and models have

attempted to address the various components of teacher turnover.

Importance of the Teacher

Darling-Hammond (1997) acknowledged that there are not enough qualified teachers. Not only is it important to have competent teachers, but the job of teacher is more than just covering the curriculum. To achieve the goal of the *No Child Left Behind Act*, school districts throughout the United States must provide students with qualified teachers, and also develop beginning teachers (Alliance for Excellent Education, 2002). When teachers leave, districts are burdened with the task of recruitment, hiring, and training new teachers. If more effort is focused on reducing teacher turnover, districts can use these financial resources to improve instruction. More money could also be allocated to proven research-based effective instructional strategies, techniques, and professional development of existing teachers.

Exodus of Teachers

There is currently a broad consensus in educational research and policy that one of the primary causes of poor student performance is the inability to adequately staff classrooms with qualified teachers (Ingersoll, 2001b). Although this shortage of qualified teachers affects all schools, it is most severe in high-poverty and high-minority schools with student populations that are generally low-performing (Berry & Hirsch, 2005). In other words, the students who are most desperately in need of qualified teachers are the least likely to have them.

Ingersoll (2003b) contended that 14% of first-time teachers quit in the first year; 33% leave within three years; and half of all new teachers will exit the profession after five years – the average time it takes for teachers to maximize their students' learning (Colbert

& Wolff, 1992). Many teachers who see no hope for change leave the profession altogether. Rather than encouraging new teachers to develop and progress, new teachers are often left on their own to fend for themselves (Halford, 1998), and the result is failure in many cases. The rate of turnover is roughly 50% higher in high-poverty schools than in low-poverty schools (NCTAF, 2003). Teachers new to the profession are far more likely to leave than are their more experienced counterparts (Ingersoll, 2003b) and the best and the brightest teachers are often the first to leave (Henke, Chen, & Geis, 2000).

Why do teachers, particularly those who have taught for only a few years, leave the classrooms they worked so hard to enter? Teachers cite a lack of support and poor working conditions among the primary factors (Alliance for Excellent Education, 2005). "We don't put attorneys just out of law school alone on their first case, yet we put new teachers alone in the classroom for their first year and expect them to shoulder the same responsibilities as veteran teachers" (Carroll & Fulton, 1999, p. 2).

New teachers are expected to assume a full schedule of classes, create their own lesson plans, and develop teaching techniques and classroom-management strategies in relative isolation. They are also expected to learn quickly the administrative routine details of the job, from taking attendance and communicating with parents to navigating the school's computer network and finding the faculty bathrooms. The result is that new teachers must weather a frazzling first year that many veterans come to view as a rite of passage (Butterfi, 2005). Beginning teachers are particularly vulnerable because they are more likely than their more experienced colleagues to be assigned low-performing students. Despite the added challenges that come with teaching students with higher needs, most new

teachers are given little professional support, feedback, or demonstration of what it takes to help their students succeed.

Researchers have suggested various explanations as to the source of teacher turnover. Plecki, Elfers, Loeb, Zahir, and Knapp (2005) concluded that teacher retention is related to the ethnic composition of the school's student population. Hanushek, Kain, and Rivkin (1999) discovered that teaching lower-achieving students was a strong factor in decisions to leave Texas public schools. Murnane (1984) reported that teachers with lower supervisor evaluations and whose students had lower test-score gains were more likely to leave teaching after one or two years. Ondrich, Pas, & Yinger, (2005) concluded that secondary teachers in upstate New York were more likely to move to another school or district than elementary teachers.

If the literature shows that high quality teaching makes a difference, why isn't every child in America getting it? The conventional wisdom is that there are not enough qualified teachers. "The real school staffing problem is teacher retention" (NCTAF, 2003, p. 6). The inability to support high quality teaching in many schools is not the result of too few teachers entering the profession, but by too many leaving it for other jobs. The ability to create and maintain a quality teaching and learning environment in a school is limited not by teacher supply, but by high turnover among the teachers who are already there.

In short, high teacher turnover is an added burden of cost and inefficiency for school districts. It poses a particular threat to the fiscal health of already financially strapped districts (Ondrich et al., 2005; Fitz-enz, 1997). School district funds drained by turnover-related costs could be used in much more productive ways to increase student performance.

Because the consequences of teacher turnover are considerable, it is imperative that fiscally responsible school districts understand the cost. Therefore, it is important to explore what brought us to this point.

History of Teacher Turnover

In the 1920s the National Education Association reported a 16% teacher turnover rate (NEA, 1924). In 2007, the rate was only slightly higher at 16.8% (NCTAF, 2007b). During the 1940s, prior to the baby-boom years after World War II, there existed a massive teacher shortage, which was a direct result of the poorly established image society had created for teachers (NEA, 1962). During this era, education was not on the forefront of most political agendas as the country was involved in the war, thus resulting in education being an afterthought for politicians and other government officials.

In a 1957 nationwide study of school board presidents, McGuinn reported that 40.4% of school board presidents cited teacher turnover as the most serious problem schools faced. The National Education Association reported in 1960 that "the greatest loss of teachers occurs in the first three or four years of teaching" (Alexander, Rush, & Figg, 1966, p. 8). Overstreet (1960) surveyed 300 teachers in Alaska who indicated they would not return to their jobs after the 1959-1960 school year, resulting in an overall rate of teacher turnover in Alaska for that year of 34.2%. Whitener (1965) examined turnover rates in ten St. Louis area school districts. Findings from his study indicated a U-shaped turnover curve – similar to that suggested by Grissmer and Kirby 20 years later – with turnover being very high during the first five years.

In the early 1970s, NEA declared the teacher shortage to be officially over due to the creation of federal government programs resulting from concerns about the launching of Sputnik I in 1957 and the passage of the Civil Rights Act in 1964. Political leaders became more focused on student achievement and less concerned about teacher retention, teacher satisfaction, and the impact of highly qualified teachers. Although it appeared that political leaders had found a solution to the teacher shortages of the 1950s and 1960s by implementing federal funded programs to increase the number of trained teachers, the majority of educational researchers neglected to notice the impact of the American educational system on the teachers themselves. The cornerstone for future investigations in teacher retention and turnover began in this period of time (Watson, 2000). The research studies of teacher shortages became more frequent and the emphasis moved to teacher incentives. The earlier studies were designed to describe the teacher turnover whereas studies in the 1980s were seeking causes for teachers leaving the profession. In addition, the impact and influence of salary differentials, career ladders, merit pay, and school district characteristics were studied.

The 1983 publication of *A Nation at Risk* drew widespread national attention to the plight of American schools (Alliance for Excellent Education, 1999). The report claimed that American teachers were ill-prepared and teacher retention quickly became a source of major concern. Between 1987 and 1991, more people were entering the teaching profession than were leaving; but over the past two decades, the gap between those leaving and entering has grown enormously. High turnover creates an obvious set of problems – "lack of continuity and stability for students, difficulty in building a successful school team, and

difficulty in sustaining a culture of success and improvement over time" (NCTAF, 2003, p. 1).

During the 1980s, educational researchers warned national leaders of a severe teacher shortage with Darling-Hammond (1984) predicting the shortage would occur by the end of the decade. Others argued that the issue was not a shortage of teachers or an increase in teacher retirement, but rather the inability to retain highly qualified teachers, primarily at the beginning stages of their careers. Toward the end of the 1980s and throughout the 1990s, education became one of the most criticized professions in America.

In the 1990s, several leading economists became interested in developing models for the teacher labor market to address the issues and problems of teacher turnover. They developed behavioral models that linked demand and supply estimates to conditions within the market that addressed life decisions of teachers (Murnane, Singer, Willett, Kemple, and Olsen, 1991). Grissmer and Kirby (1987) used an extensive database containing 24 years of Indiana teacher data to determine that employment decisions were dependent on salary and working conditions. Looking at teacher turnover, they found teachers in the first five years leave the fastest. Other researchers had concluded that Caucasian teachers left before African American teachers and secondary teachers left before elementary teachers (Adams & Dial, 1994; Murnane et al., 1991). Not surprisingly urban schools appeared to be having the hardest time filling teaching positions, especially in the areas of mathematics, science, special education, and bilingual education because most college graduates preferred to teach in the suburbs than in the city (Olson & Jerald, 1998). Urban districts were experiencing

teacher turnover rates as high as 50 percent within the first five years of an educator's career (Shann, 1998).

In the state of Texas between 1993 and 1996, 13 to 19 percent of the teachers quit after the first year, and 35 to 45 percent left by the end of the third year (Benner, 2000). When the career paths of new teachers were studied in Massachusetts over four years, Johnson and Birkeland (2003) reported that 24 out of 50 new teachers (48%) left the schools where they started teaching. America's teacher preparation programs generally produce enough teachers to meet the needs for every school year. However, teachers who have taught five years or less are leaving the profession in vast numbers. This turnover results in negative consequences for the quality of instruction in schools because many teachers do not stay long enough to become competent at teaching.

Ingersoll (2002c) solidified McGuinn's 1957 diagnosis – that the teacher shortage is not the result of retirement, a shortage of teachers, an increase in student enrollment, or even school staffing cuts, but the result of the educational system's inability to retain quality teachers and end the turnover dilemma. The supply of teachers was compared with water being added to a bucket with holes (Ingersoll, 2002b). The problem does not lie in the amount of water – or the number of available teachers – but in the inability to repair the holes – to understand why we are losing teachers at an accelerated rate. The conclusion: "recruiting more teachers will not solve the teacher crisis if 40 to 50% of such teachers then leave within five years" (Ingersoll, 2002b, p. 17). Darling-Hammond (1996) asserted, "With the turnover rate of new teachers estimated at 30% within the first year of teaching, the

quality of education is at risk" (p. 3). Based on this information, it is important to understand how this crisis affects a school district's budgetary bottom line.

Financial Impact of Teacher Turnover

The stakes for making quality educational decisions are high (Huff, 2002). Districts are entrusted with large sums of money and the most cherished possession of the community – children. There is a clear need for districts to be vigilant in the planning and decision-making processes. District data are a plentiful resource, with schools accumulating data on everything from attendance to test scores. Virtually every district collects an incredible amount of data on an annual basis but the major shortfall of many districts lies in their underutilization of the great storehouses of data they collect (Noyce, Perda & Traver, 2000; Yeagley, 2001). Districts have become data rich, but remain knowledge poor (Kongshem, 1999). Therefore, districts should rely on the data they collect to make informed decisions.

The human resource department of an organization has often been viewed as a reactionary entity rather than a proactive entity. The majority of money that a school district spends is on payroll. Every year, schools in the United States spend anywhere from $2.6 billion to $7.2 billion on teacher turnover (Ingersoll & Smith, 2003; Benner, 2000; Alliance for Excellent Education, 2005; NCTAF, 2007b). In 2005, the Alliance for Excellent Education estimated that more than 394,000 teachers would not return to the schools in which they taught the previous year, and replacing them could cost almost $5 billion, according to conservative estimates, with others transferring to other schools, at an approximate cost of $3 billion (Cavanagh, 2005). The dilemma therefore becomes how school districts can accurately measure the cost of replacing teachers.

Measurement of Teacher Turnover Costs

Smith and Watkins (1978) were the first researchers to address the actual costs related to employee turnover. They believed that "a practical measurement process must be utilized for analyzing the costs of personnel turnover" (p. 46), by considering three major cost categories: separation costs, replacement costs, and training costs. Their description of the costs are as follows:

Separation Costs

1. Exit interview

   a. Cost of interviewer's time = (time required prior to interview + time required for interview) x interviewer's pay rate during period x number of turnovers during period

   b. Cost of terminating employees' time = time required for the interview x weighted average pay rate for terminated employees x number of turnovers during period

2. Administrative functions related to terminations = time required by personnel department for administrative functions related to termination x average personnel department employee's pay rate x number of turnovers during period

3. Unemployment tax = (unemployment tax rate – base rate) x budgeted taxable wages for following year

Replacement costs

1. Communicating job availability = [advertising and employment agency fees per termination + (time required for communicating job availability x personnel department employee's pay rate)] x number of turnovers replaced during period

2. Pre-employment administrative functions = time required by personnel department for pre-employment administrative functions x average personnel department employee's pay rate x number of turnovers replaced during period

3. Entrance interview = time required for interview x interviewer's rate x number of interviews during period

4. Staff meeting = time required for meeting x (personnel department employees' pay rate + department representatives' pay rate) x number of meetings during period

5. In-house medical examinations = [(time required for examination x examiner's pay rate) + cost of supplies used] x number of turnovers replaced during period
   OR
   Contracted medical examinations = rate per examination x number of turnovers replaced during period

Training Costs

1. Informational literature = unit cost of informational package x numbers of instructions during period

2. Instruction in a formal training program = hours required for instruction during period x average pay rates for all trainers and instructors

3. Instruction by employee assignment = number of hours required for instruction x new employee's pay rate x number of instructions during period

They understood the importance of this process. "When organizations experience continually high levels of employee turnover, more effective decisions are imperative" (Smith & Watkins, 1978, p. 50).

In 1991, Wayne Cascio in his book *Costing Human Resources: The Financial Impact of Behavior in Organizations* added a fourth category – learning curve loss. The learning curve loss was reflected in productivity differentials based on the difference between the ratios of the leaver and the new employee. The performance productivity calculation was the "cost in terms of the time it takes the new employee to become productive" (Sorensen, 1995, p. 50). Sorensen predicted that, in order to get a new employee up to speed, it cost 80 percent of the employee's salary the first month, 60 percent the

second month, 40 percent the third month, and 20 percent the fourth month. This formula suggested that an employee makes 20 percent per month in productivity gain; thus, a new employee must work five months to reach productivity (Benner, 2000).

Bliss reasoned that "as the new employee is learning the new job, the company policies and practices, etc., they are not fully productive" (Bliss, 2001, ¶ 9). Bliss' estimation was that the employee is contributing at a 25 percent productivity level for the first four weeks. The cost is therefore 75 percent of the new employee's full salary during that time period. Until week 12, the employee is contributing at a 50 percent productivity level. During weeks 13-20, the employee is contributing at a 75 percent productivity level. This researcher confirmed that it takes a new employee five months to become fully productive. Pinkovitz, Moskal and Green (1997) of the University of Wisconsin added the final category – vacancy cost. This included cost of additional overtime, cost of additional temporary help, and wages and benefits saved due to vacancy.

Teacher turnover costs have only recently been a focus of education researchers. A Texas study was the first large scale education study to address the topic of teacher turnover costs but the study was criticized because it used an business model to estimate costs in schools, and because it failed to account fully for costs in its more in-depth study of three school districts (Benner, 2000). Although this study has not undergone quality control, it has some utility because it has survived the test of time, as it has served as a backdrop for other most recent studies. A Chicago study used three models for estimating teacher turnover costs, instead of actual teacher turnover data which was available for 64 elementary schools (ACORN, 2003). None of the models used actual costs and each model produced widely

varying results. The next study that gained prominence was produced by Breaux and Wong (2003), which was based on the work of human resource specialists in business and concluded that the loss was 2.5 times the teacher's initial salary. In 2005, the Alliance for Excellent Education used a U. S. Department of Labor estimate of 30% of the leaver's salary to estimate national teacher turnover costs at $4.9 billion, which was only about twice as much as the upper bound of the Texas report of annual costs – for Texas alone (see Table 1).

Finally, the Florida study of 2006 became the first study that utilized real cost data – instead of estimates derived from other fields. Shockley, Guglielmino, and Watlington conducted a study of teacher turnover in Broward County, Florida – home of Fort Lauderdale – and St. Lucie County. The results showed that Broward County had a turnover rate of 7.25% and an average cost of $12,652 while St. Lucie County had a turnover rate of 16.4% with an average cost of $4,631. The researchers explained the difference as the "infrastructure investment that Broward County School System is making in their teacher/induction support system" (Shockley, Guglielmino, & Watlington, 2006, p. 6). The results of each of these studies are described in detail below.

Texas Study (2000)

According to the Texas Center for Education Research report, Texas school districts reported that a significant percentage of teachers left the profession within the first three years of employment, with 13 to 19 percent leaving after the first year and 35 to 43 percent gone by the end of the third year (Benner, 2000). This represented a cost to public education beyond the expense of operating schools and was a wasted expense that did not contribute to

the education of Texas students. The report's conclusion set the stage for future teacher turnover studies.

> High teacher turnover is a burden of cost and inefficiency to the Texas public school system, and turnover may also affect student performance, particularly in schools where the turnover rate is consistently high (Benner, 2000, p. 1).

Using the 2000 Texas teacher turnover rate of 15.5%, the researcher concluded, "Texas is losing between $329 million and $2.1 billion per year, depending on the industry cost model that is used" (Benner, 2000, p. 2).

Several industrial models were examined that estimated employee turnover. Hauenstein (1999) postulated that the turnover cost per employee was approximately 25 percent of the annual salary plus the cost of benefits, which averaged about 35 percent of the annual salary. Benner acknowledged that this was a conservative estimate. Gately (1990) and Ettorre (1997) agreed that the turnover rate was roughly 25 percent but Gately estimated benefits at 30 percent of the leaver's annual salary. The U. S. Department of Labor estimated that cost was higher at 33 percent (Brannick, 1999). Benner agreed that these estimates were "conservative because they do not calculate actual costs the organization invests in termination, recruitment and hiring, substitutes, learning curve loss, and training" (p. 3). Once all the costs were calculated, the actual cost of turnover could reach as high as double the annual salary and benefits of the leaver (Fitz-enz, 1997).

Benner looked at three models for a more complete perspective on the costs of employee turnover. The first model included three categories of expenses: hiring costs, training costs, and lost productivity costs (Sorensen, 1995; Jones, 1999). The second model specified four types of costs: separation costs, replacement or hiring costs, training costs,

and learning curve loss (Smith & Watkins, 1978; Cascio, 1991). The third model added vacancy costs to the second model (Bliss, 2001; Fitz-enz, 1997, 1998; Pinkovitz et al., 1997; Brown, 2000).

Within the *separation* category, costs included any exit interviews costs and applicable administrative tasks related to termination involving processing employee records, security, and payroll and costs related to stoppage of payroll, benefits, deductions, COBRA notification, and general termination paperwork (Fitz-enz, 1997; Bliss, 2001). *Hiring* costs included advertising, agency fees, employee referrals, recruiter's pay and benefits, travel for applicants and staff, and relocation costs. It encompassed the time spent interviewing applicants, conducting pre-employment tests, drug testing, criminal background checks, educational checks, and reference checks. Post-employment tasks included establishing payroll, security and computer passwords, creating email accounts, and conducting dissemination activities (Pinkovitz et al., 1997).

Vacancy costs included wages for substitute employees in addition to overtime for current employees covering the vacant position (Fitz-enz, 1997; Pinkovitz et al., 1997). The *learning curve loss* costs included the expenses associated with the time it took for a new employee to reach full productivity (Bliss, 2001; Sorensen, 1995), with the average time about five months. The final category of *training* costs included both formal and informal costs. Training costs encompassed the cost of the trainer and training materials, orientation and mentoring activities, and time spent by others explaining and reviewing the work of the new employee.

The industry-based costs ranged from 50 percent (Sorensen, 1995) to 100 percent (Ettorre, 1997) to 150 percent (Bliss, 2001) to 200 percent (Fitz-enz, 1997). The researchers seemed to agree that the more the leaver was paid, the higher the percentage for total turnover costs. Separation costs could be as high as 85 percent of the leaver's salary with hiring costs at 15 percent of the salary (Bliss, 2001; Cascio, 1991). If an employment agency was used, that percentage increased to 38 percent. In terms of vacancy costs, Saratoga Institute research reported that organizations averaged 53 business days to replace an employee (Fitz-enz, 1997). Training costs accounted for 13 percent of the leaver's salary while the learning curve loss was estimated at 32 percent. Sorensen (1995) proposed calculating the cost of productivity differentials using the following formula:

Cost = (0.8*monthly salary [MS]) + (0.6 * MS) + (0.4 * MS) + (0.2 * MS)

This formula suggests that an employee makes 20 percent gains in productivity each month, requiring five months to reach full productivity.

Benner applied two estimations to the Texas data – a *conservative* estimate of 25 percent of the leaver's annual salary and associated benefits (Gately, 1990; Ettorre, 1997; Hauenstein, 1999) and a *pragmatic* estimate of 150 percent of the leaver's annual salary (Fitz-enz, 1997; Bliss, 2001). Benefit costs were defined as 30 percent of the leaver's annual salary. Five districts were selected to represent different regions of Texas – districts with 15,000 to 78,000 students and turnover rates between 12 percent and 22 percent.

Table 2 compares the cost of per-teacher turnover using the ***conservative*** estimate, which shows similar costs among districts in different regions and highlights the fact that

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costs are roughly consistent across the state using the conservative methodology. While Table 2 estimates the cost of losing a single teacher, Table 3 utilizes actual teacher turnover rates for districts to ***conservatively*** estimate the total turnover costs these districts incur by losing as much as 22 percent of their teaching workforce. It illustrates that turnover rates vary among Texas districts and these rates affect the cost of teacher turnover.

Table 4 reflects the ***pragmatic*** estimations of the total cost of turnover per teacher for the districts, assuming that turnover costs equal 150 percent of the leaver's annual salary. While Table 4 illustrates the turnover cost per teacher, "calculating turnover costs using actual teacher turnover rates for these districts more adequately represents the total turnover costs that districts face" (Benner, 2000, p. 10). Table 5 represents the total turnover costs – based on the turnover rate – if each district lost teachers all making the average teaching salary.

Benner (2000) selected three Texas school districts to serve as examples for estimating teacher turnover costs, requesting detailed expenditure information from these districts and interviewing the human resource director, deputy superintendent, or chief financial officer for each district to gain a better understanding of the district's hiring and retention history and the approaches taken to fill vacancies. Districts A and B were relatively large districts located in urban areas with student enrollments between 10,000 and 25,000 while District C had a student enrollment under 3,000 and was located approximately 30 miles from an urban area. District A had a teacher turnover rate of 20.4 percent while District C had a rate of 23.3 percent, with both reporting difficulties hiring qualified teachers. District B had a turnover rate of 15.0 percent, which was below the state average,

TABLE 2: CONSERVATIVE CALCULATION OF PER-TEACHER COST BY REGION
Source: Benner (2000)

Years of Experience	North Texas Average	Panhandle Average	South Texas Average	West Texas Average	Central Texas Average	State Average
0 Years	$10,328	$8,750	$9,063	$8,906	$7,575	$8,924
5 years	$10,567	$8,905	$9,892	$9,595	$8,869	$9,566
10 years	$11,490	$10,541	$11,589	$10,541	$10,541	$10,940
15 years	$12,504	$11,800	$13,052	$11,865	$11,800	$12,204
20 years	$13,860	$12,750	$13,357	$12,895	$12,750	$13,122
Average	**$11,750**	**$10,549**	**$11,391**	**$10,760**	**$10,307**	**$10,951**

TABLE 3: CONSERVATIVE CALCULATION OF TOTAL TEACHER COST BY REGION

Source: Benner (2000)

Years of Experience	North Texas Average	Panhandle Average	South Texas Average	West Texas Average	Central Texas Average	State Average
Turnover Rate	16.4%	13.8%	11.7%	11.7%	22.8%	15.5%
Teachers Lost	755	300	175	184	223	40,260
0 years	$7,797,734	$2,625,000	$1,585,938	$1,638,750	$1,689,225	$331,361,218
5 years	$7,978,227	$2,671,406	$1,731,133	$1.765,480	$1,977,731	$377,030,639
10 years	$8,674,950	$3,162,188	$2,208,031	$1,939,475	$2,350,559	$439,231,636
15 years	$9,440,567	$3,540,000	$2,284,133	$2,183,160	$2,631,400	$489,946,082
20 years	$10,464,300	$3,825,000	$2,337,508	$2,372,623	$2,843,250	$528,293,298
Average	**$9,331,328**	**$3,415,406**	**$2,095,297**	**$2,053,153**	**$2,364,427**	**$447,686,140**

TABLE 4: PRAGMATIC CALCULATION OF PER-TEACHER COST BY REGION
Source: Benner (2000)

Years of Experience	North TX Average	Panhandle Average	South TX Average	West TX Average	Central TX Average	State Average
0 years	$49,575	$42,000	$43,500	$42,750	$36,360	$42,837
5 years	$50,723	$42,743	$47,498	$46,056	$42,570	$45,918
10 years	$55,152	$50,595	$55,626	$50,595	$50,595	$52,513
15 years	$60,011	$56,640	$62,651	$56,952	$56,640	$58,579
20 years	$66,528	$61,200	$64,115	$61,895	$61,200	$62,988
Average	**$56,398**	**$50,636**	**$54,678**	**$51,650**	**$49,473**	**$52,567**

TABLE 5: PRAGMATIC CALCULATION OF TOTAL TEACHER COST BY REGION

Source: Benner (2000)

Years of Experience	North TX Average	Panhandle Average	South TX Average	West TX Average	Central TX Average	State Average
Turnover Rate	16.4%	13.8%	11.7%	11.7%	22.8%	15.5%
Teachers Lost	755	300	175	184	223	40,260
0 years	$37,429,125	$12,600,000	$7,612,500	$7,866,000	$8,108,280	$1,590,533,844
5 years	$38,295,488	$12,822,750	$8,039,438	$8,474,304	$9,493,110	$1,809,747,067
10 years	$41,639,760	$15,178,500	$9,734,550	$9,309,480	$11,282,685	$2,108,311,853
15 years	$45,314,723	$16,992,000	$10,963,838	$10,479,168	$12,630,720	$2,351,741,191
20 years	$50,228,640	$18,360,000	$11,220,038	$11,388,588	$13,647,600	$2,535,807,831
Average	**$44,790,375**	**$16,393,950**	**$10,057,425**	**$9,855,132**	**$11,349,925**	**$2,148,893,474**

but had no difficulty hiring teachers.

Table 6 differentiates the separation costs, hiring costs, and training costs for each district, resulting in totals per lost teacher for each district. "It is important to note that districts do not identify or report expenditures specific to teacher turnover; therefore, turnover costs for Texas districts would be difficult to study on a large scale" (Benner, 2000, p. 15). While districts like District B did not have difficulties hiring and retaining teachers, they were not representative of most Texas districts. Therefore, it would not be accurate to simply average district costs. The Texas study, using industry turnover costs models and actual education data, estimated the cost of teacher turnover at 20 percent of the leaving teacher's annual salary.

TABLE 6: ITEMIZED PER-TEACHER COSTS BY DISTRICT
Source: Benner (2000)

ACTIVITY	COST PER TEACHER LOST		
	DISTRICT "A"	DISTRICT "B"	DISTRICT "C"
Separation Costs			
Exit interview	$9.01	$27.01	NA
Administrative tasks	$508.13	$114.25	$497.76
Hiring Costs			
Advertising cost	$91.12	$5.50	$41.67
Recruiting costs	$633.26	$36.09	$108.46
Processing applications/resumes	$15.33	$9.74	$47.75
Background checks	$70.67	$26.54	$56.33
Conducting interviews	$73.33	$80.31	$124.44
Administrative tasks	$450.52	$54.12	$12.72
Signing bonus	$720.00	NA	$2,000.00
Subject matter shortage area stipend	$392.00	NA	$120.00
Training Costs			
Orientation	$2.39	$1.36	$4.84
Training	$2,200,00	NA	$353.00
TOTAL PER TEACHER LOST	**$5,165.76**	**$354.92**	**$3,366.97**

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Chicago Study (2002)

The Association of Community Organizations for Reform Now (ACORN) examined 2001-2002 teacher turnover in 64 Chicago Public Schools (CPS) elementary schools. ACORN is the nation's largest grassroots community organization of low- and moderate-income people with over 400,000 member families organized into more than 1,200 neighborhood chapters in about 75 cities across the country. The schools in this study were located in neighborhoods where Chicago ACORN has traditionally organized chapters – North Lawndale, Englewood, West Englewood, Chicago Lawn, and Little Village. Almost all of these schools have high-minority and high-poverty student populations and many are academically low-performing (ACORN, 2003, ¶ 2).

The one-year turnover rate for the 2,377 teachers at these schools was 22.9 percent. For novice teachers, the turnover rate was 23.3 percent (ACORN, 2003, ¶ 3). This study used three models employed in teacher turnover research: 20 percent of salary, 150 percent of salary, or 2.5 times teacher preparation cost (Benner, 2000; Education Commission of the States, 1999). Each model's cost estimate, when multiplied by the 545 teachers who left their positions in the 2001-2002 school year, resulted in the following total turnover cost in the 64 elementary schools: Model One, $5,629,523; Model Two, $42,221,422; and Model Three, $34,710,505. Chicago Teachers Union President Deborah Lynch observed, "We must make a significant dent in the teacher turnover rate. This is especially true in high-poverty, high-

minority, low-performing schools if teacher turnover rates in these schools are

consistently higher than average rates across the country (ACORN, 2003, ¶ 22).

To estimate the long-term impact of new teacher turnover on these schools,

ACORN calculated the turnover rate for teachers with one through five years of

experience:

1 year of teaching experience:	21.8% turnover
2 years of teaching experience:	22.9% turnover
3 years of teaching experience:	24.0% turnover
4 years of teaching experience:	22.7% turnover
5 years of teaching experience:	25.6% turnover

Figure 1 displays how the one-year turnover rate of 22.9 percent in this study

surpassed the national turnover rates of all schools (15.7%), public schools (15.1%),

urban schools (15.9%), low-poverty schools (12.9%), and high-poverty schools

(20.0%). Projected over five years, the turnover rate of first-year teachers in the

ACORN study was 73.3 percent, compared with national turnover rates of 40 to 50

percent.

FIGURE 1: CHICAGO VERSUS NATIONAL TEACHER TURNOVER
Source: ACORN (2003)
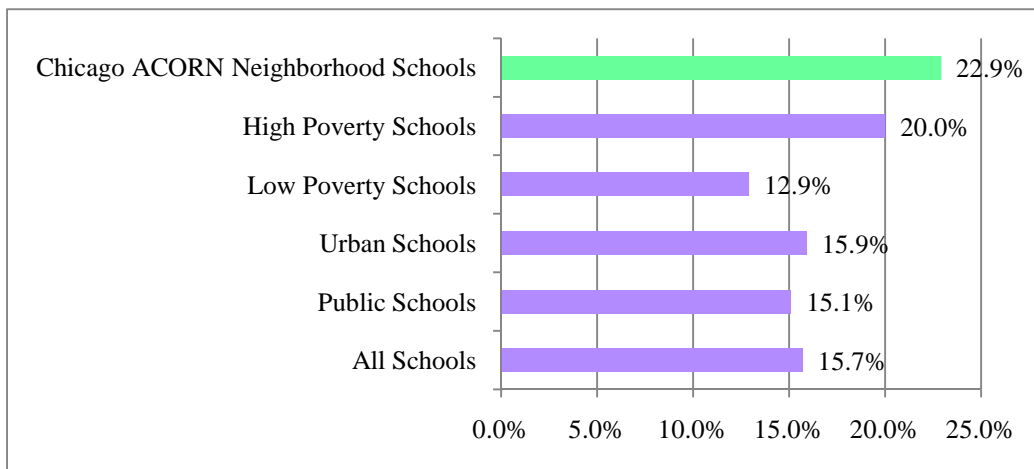
National Study (2005)

Using the U. S. Department of Labor formula of 30 percent of the leaving employee's salary, the Alliance for Excellent Education (2005) released a national analysis of cost estimates where it was estimated that the national cost of replacing teachers that leave the profession was $2.2 billion per year and that when the cost of replacing public school teachers who transfer schools was added the total cost was approximately $4.9 billion (see Table 1).

To understand the regional differences of teacher turnover costs, it is important to analyze selected states in all four regions of the United States – North, South, East, and West. For this comparison, New Jersey (NJ) and Massachusetts (MA) were selected to represent the East region, Minnesota (MN) and Wisconsin (WI) the North region, Oklahoma (OK) and Arkansas (AR) the South region, and Oregon (OR) and Washington (WA) the West region. The East region has the highest turnover costs at $266,374,679, followed by the North region at $156,310,519 and the West at $121,544,013 but the South region having the lowest costs at $94,391,997 (Figure 2).

The difference in costs in various areas of the country was analyzed by looking at several economical and educational factors (MERIC, 2009; NEA, 2009; Kentucky Legislative Research Council, 2007).

FIGURE 2: TURNOVER COSTS OF SELECTED STATES AND REGIONS

Source: Alliance for Excellent Education (2005)
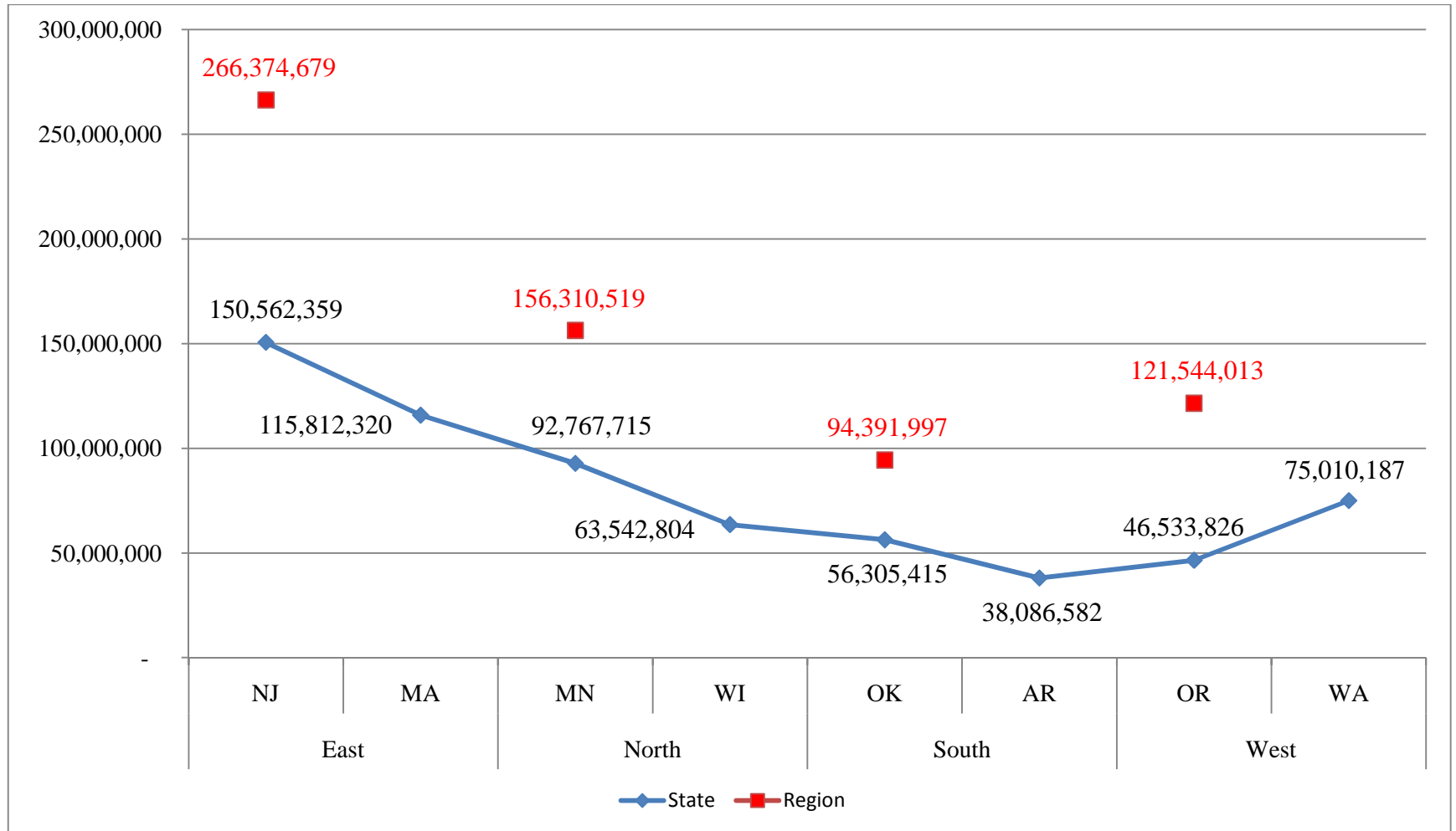
- *Cost of Living Index*: Oklahoma ranked first in having the lowest cost of living index (88.2), followed by Arkansas (3rd at 90.0), Wisconsin (19th at 96.6), Minnesota (33rd at 103.0), Washington (35th at 104.5), Oregon (38th at 114.1, and finally Massachusetts (41st at 118.5) and New Jersey (47th at 126.9) .

- *Teacher Salaries*: In 2008, New Jersey teachers ranked 4th ($61,277) followed by Massachusetts (7th at $60,471), Oregon (17th at $51,811), Minnesota (19th at $50,582), Washington (20th at $49,884), Wisconsin (21st at $49,051), and finally Arkansas (35th at $45,773) and Oklahoma (42nd at $43,551) .

- *Expenditures Per Student*: New Jersey ranked 2nd ($15,374) followed by Massachusetts (6th at $13,768), Wisconsin (18th at $10,643), Minnesota (20th $10,560), Arkansas (22nd at $9.591), Oregon (27th at $9,469), Washington (31st at 9,804), and finally Oklahoma (46th at $7,615).

- *Turnover Rate*: Minnesota was ranked highest at 22nd (13.44%, followed by Oklahoma (24th at 13.11%), Oregon (25th at 12.92%), Arkansas (28th at 12.60%), Washington (39th at 11.16%), Massachusetts (42nd at 10.60%), New Jersey (48th at 9.81%), and with the lowest in Nation, Wisconsin (51st at 7.66%).

- *Cost Per Teacher Leaving or Transferring*: New Jersey was ranked highest at 7th ($15,603.93), following by Massachusetts (10th at $13,973.49), Oregon (16th at $12, 700.28), Wisconsin (19th at $12,345.60), Washington (20th at

$12,312,90)$, Minnesota (23rd at $11,940.75$), and finally Arkansas (43rd at $10,014.88$) and Oklahoma (49th at $9,388.93$).

Cost of Living Index	East	West	North	South
Teacher Salaries	East	West	North	South
Expenditures Per Student	East	North	West	South
Turnover Rate	South	West	North	East
Cost Per Teacher Leaving or Transferring	East	West	North	South

The relationships (highest to lowest) between the factors and the regions of the country are displayed above. The East region dominated most of the categories, explaining why those costs are the highest. The North and West seemed more evenly matched with the South region trailing in most categories. Oklahoma – which is part of the South region – ranked low in cost of living, teacher salaries, expenditures per student, and cost of turnover per teacher. This may be due to the low average teacher salaries. However, it was in the median range in turnover rate.

Florida Study (2005)

A longitudinal study conducted in Florida observed that "new hire retention rates varies greatly by school district" (Shockley, Guglielmino & Watlington, 2006, p. 2). The teacher retention rates ranged from as low as 45 percent to 73 percent after four years. The researchers designed an instrument to determine a school district's costs of replacing a teacher, which required a school district to analyze costs around the categories of separation costs, hiring costs, and training costs. The

school districts used in this validation study were the counties of Broward, where Fort Lauderdale is located, and St. Lucie, between West Palm Beach and Vero Beach on the eastern coast. Ironically, the district with the highest teacher retention rate – Broward County – was a school district that had a very strong and supported teacher induction and mentoring program. Table 7 displays a comparison of the two counties.

TABLE 7: COMPARISON OF BROWARD AND ST. LUCIE COUNTIES
Source: Shockley, Watlington, Carlstrom, Huie, Morris, & Lieberman (2005)

	BROWARD COUNTY	**ST. LUCIE COUNTY**
Cost Per Teacher	$12,652	$4,631
Teachers Leaving	1,206	320
Total Number of Teachers	16,648	1,952
Turnover Percentage	7.24%	16.39%

Broward County had a higher cost to replace a teacher but a lower turnover rate. The researchers believed that "due to the smaller turnover rate the Broward district is saving costs as well" (Shockley et al., 2006, p. 6). In another longitudinal study of teacher retention (Shockley, Guglielmino & Watlington, 2007), where all teachers new to the school district in the 2000-2001 school year were tracked over a period of years, Broward County School District had a retention rate of 73 percent after four years, versus 45 percent in St. Lucie County.

Boston Study (2006)

Boston Public Schools (BPS) spent $3.3 million in 1999-2005 to replace 194 first, second, and third year teachers. That number represented 19 percent of first-year teachers, 22 percent of second-year teachers, and 15 percent of third-year teachers (Birkeland & Curtis, 2006). The researchers extrapolated that the likelihood that a new teacher would leave BPS before the beginning of their 4th year of teaching at 47 percent, with that number increasing to 53 percent for teachers of color (Education Trust, 2008). Table 8 displays that "new teachers of color (African American, Hispanic, and Asian) leave at higher rates than do Caucasian teachers" (Birkeland & Curtis, 2006, p. 10). These turnover rates were consistent with those of other large districts such as New York, which lost approximately 17 percent of new hires after their first year (Council of the City of New York, 2003), and Philadelphia, which reported a 51 percent turnover rate for teachers in their first three years (Neild, Useem & Farley, 2005). This study is significant because new teachers typically spend their first year in survival mode and do not reach full effectiveness until about the fifth year of practice (King-Rice, 2003).

When new teachers churn through the district, some students may never get the benefit of learning from a teacher who has taught for several years in a row and built his or her expertise. In addition, teacher turnover disrupts the work of administrators and other teachers in the school. Administrators must screen, interview, and hire replacements, and find teachers to cover the departing teachers' classes and duties until this process is complete (Birkeland & Curtis, 2006). They

TABLE 8: NEW TEACHER TURNOVER BASED ON COLOR

Source: Birkeland & Curtis (2006)

	All New Teachers	Caucasian	Teachers of Color	African American	Hispanic	Asian
1st Year Teachers	89 of 474	53 of 307	36 of 167	22 of 96	10 of 45	4 of 25
	19%	17%	22%	23%	22%	16%
2nd Year Teachers	61 of 275	34 of 176	25 of 98	23 of 77	1 of 12	2 of 9
	22%	19%	26%	30%	8%	22%
3rd Year Teachers	44 of 294	25 of 190	19 of 104	14 of 64	3 of 22	2 of 18
	15%	13%	18%	22%	14%	11%
Probably leaving before the 4th year	**47%**	**42%**	**53%**	**58%**	**38%**	**42%**

must orient the new hires to the culture of the school, its building and resources, faculty, students, and curriculum. Administrators must bring the new hires up to speed on the school's priorities, mission, and prevailing pedagogy. This takes time and effort away from the primary responsibility of educating students.

Birkeland and Curtis (2006) acknowledged that teacher turnover was financially costly, for the district must recruit, screen, and process replacements for every teacher who left. BPS also invested heavily in its teachers' professional development, and with each departing teacher that investment was lost. Using a model of analysis adapted from the Texas Center for Educational Research (Benner, 2000), Birkeland and Curtis postulated a BPS-specific estimate by gathering information about district expenditures on recruitment, hiring, professional development, and processing job terminations. They estimated the replacement costs of a first-year teacher at $10,547, a second-year teacher at $18,617, and a third-year teacher at $26,687 (Birkeland & Curtis, 2006). The 1999-2005 school year turnover costs were approximately at $3.3 million just to replace the 194 first, second, and third year teachers who left the system during or at the end of the school year. "If that year was typical, one can assume that the district incurs similar turnover costs every year" (Birkeland & Curtis, 2006, p. 11).

Midwest Study (2007)

This study developed an average dollar cost per vacancy, which could be converted to a percent of payroll (Milanowski & Odden, 2007). Using the earlier

work of Smith and Watkins (1978) and Cascio (1991), the researchers defined five components of turnover cost per vacancy: cost of separation, cost of replacement staffing, net replacement pay, cost of training, and value of lost productivity. They defined *separation costs* as expenditures such as time to process termination documents, payment of accrued sick leave, or severance pay; *replacement staffing costs* as out of pocket recruitment and selection expenditures and staff time, and any monetary inducements such as a signing bonus; *net placement pay* as the difference in compensation between the worker who left and the replacement, which is usually a cost savings when an inexperienced worker replaces an experienced worker; *training costs* as orientation, induction, and training to a standard of competence that is needed for adequate performance of the assigned work, including materials, costs of formal instruction, costs of on-the-job training, and the compensation of the new employee during off-the-job training; and the *value of lost productivity* as the productivity difference between the replacement work and the worker who left, which is typically a loss and thus a cost because the replacement worker usually has a lower skill level or needs to learn the job in order to reach the level of productivity of the original worker (Milanowski & Odden, 2007).

Time spent on processing separations resulted in a processing cost of three dollars per vacancy at the district level, based on 0.08 hours spent, and 21 dollars at the school level. In addition, the average severance per vacancy was $10,667. Because 30 percent of the teachers who left were retirees, the average severance per vacancy was $3,200 (30% of $10,667). Central office replacement staffing costs

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were estimated at $1,136 per vacancy, based on dividing the compensation costs of the hours spent on administrative tasks and recruiting costs by the average number of vacancies per year over a five-year period. At the school level, the cost was estimated at $2,588 per vacancy filled. The estimate was reduced to $1,144 when teacher time costs were excluded.

The average net replacement pay was calculated by subtracting the salary and benefits of the newly hired teacher from the average compensation for teachers at each year of the seniority distribution and then multiplying this by the proportion of turnover in that year group. The results were then averaged, for a net negative replacement salary estimated at $28,149. This means that the district saved an average of $28,000 in the first year after a teacher left the district and was replaced by a beginning teacher. "It is important to note that the net replacement pay is strongly influenced by the distribution of turnover by years of service" (Milanowski & Odden, 2007, p. 11).

In this district, most of the training was conducted at the school level. The average cost of induction was estimated at $4,518 per vacancy at the school level and seven dollars at the district level. The budget for professional development was divided by the number of teachers to calculate the cost of $788, which was then multiplied by five to represent the cost of professional development needed to bring a teacher to proficiency. Using this method, the cost of lost professional development was estimated at $3,940 per vacancy. Higher induction and professional costs were not strongly related to the achievement level of the students.

Milanowski and Odden (2007) posited that, although the separation, hiring and training costs were substantial, they are not the major factors in the cost of turnover. The net replacement pay and the value of lost productivity were the most important costs. The value of lost productivity was estimated at $35,349, based on class size deduction, $28,149, based on salary difference, or $8,722, based on the Success for All program.

National Study (2007)

The National Commission of Teaching and America's Future quantified the actual financial costs of teacher turnover in five school districts: Chicago, Illinois Public Schools (CPS); Milwaukee, Wisconsin Public Schools (MPS); Granville County, North Carolina Schools (GCS); Jemez Valley, New Mexico Public Schools (JVPS); and Santa Rosa, New Mexico Public Schools (SRPS). These schools represented a range of large and small communities in addition to urban and rural. The results of this study generated the NCTAF Teacher Turnover Cost Calculator – which is available on the organization's website – to assist other schools and districts in estimating the turnover costs each year based on the number of teachers. There were six key findings of this study (NCTAF, 2007).

- *The costs of teacher turnover were substantial.* The cost-per-teacher ranged from $17,872 in Chicago and $15,325 in Milwaukee to $4,366 in Jemez Valley, New Mexico. The total cost in Chicago alone was estimated to be over $85 million per year.

- *Teacher turnover undermined at-risk schools*. NCTAF determined that low school performance and high poverty were correlated with high teacher turnover, especially in Chicago and Milwaukee.

- *At-risk schools spent scarce dollars on teacher turnover*. Because teacher turnover rates at these at-risk schools were chronically high, turnover costs become a drain on already scarce resources.

- *At-risk schools could recoup funds by investing in teacher retention*. By implementing a high quality induction program at a cost of $6,000 per teacher, Chicago could reduce their $17,872 per leaver turnover cost.

- *Turnover costs can be identified, aggregated, and analyzed*. Each of the studies previously discussed acknowledged this can be done. To save time, many of them either instead relied on well-established percentage calculations from industry or education (Benner, 2000; Breaux and Wong, 2003; ACORN, 2003; Birkeland & Curtis, 2006; Milanowki & Odden, 2007). This study helped districts analyze which teachers were leaving, from where they were leaving, and how to invest in teacher retention in order to reduce turnover costs.

- *District data systems were not designed to control the costs of turnover*. Many district data systems stood as "formidable obstacles to managing and controlling turnover" (NCTAF, 2007b, p. 5). The costs of turnover were hidden in mounds of teacher records, school data, and district financial information.

NCTAF identified eight cost elements that must be considered when examining the actual cost of teacher turnover: recruitment and advertising, special incentives, administrative processing, training for new hires, training for first-time teachers, training for all teachers, learning curve, and transfer. The teacher turnover rate equaled or exceeded the national average of 16 percent in all five school districts:

- Chicago, Illinois – 40.3%
- Milwaukee, Wisconsin – 17.4%
- Granville County, North Carolina – 16.5%
- Jemez Valley, New Mexico – 42.9%
- Santa Rosa, New Mexico – 15.5%

As a point of reference, Tulsa (591,000) is closest in population to Milwaukee (582,000). NCTAF also suggested that few studies had reported the impact of school level, poverty, limited English proficiency, minority enrollment, and school performance on turnover.

NCTAF (2007b) reported results similar to studies previously discussed – "teachers with little experience were much more likely to turnover and urban schools with high percentages of minority students had higher levels of turnover, as did schools with low academic performance" (p. 68). This study was especially critical of the data systems of the districts studied. NCTAF concluded that "to determine the cost of teacher turnover, a school district needs to be able to collect and *connect* teacher, school, and cost information" (p. 72).

Table 9 displays the district costs of turnover for four out of the five school districts. Due to state reporting requirements and a limited district staff, Santa Rosa was unable to report any costs. The NCTAF study calculated that teacher dropout

TABLE 9: TEACHER TURNOVER BY DISTRICT
Source: NCTAF (2007a)

	Chicago, Illinois	Milwaukee, Wisconsin	Granville County, North Carolina	Jemez Valley, New Mexico
Recruitment	$828,403	$380,663	$124,466	$6,142
Hiring	$340,000	$0	$170,444	$0
Administrative Processing	$137,500	$226,152	$53,977	$9,863
Training for 1st Timers	$2,968,600	$4,028	$16,843	$1,952
Training for New Hires	$0	$3,800	$96,147	$7,665
Training for All Teachers	$41,747,917	Unavailable	$40,382	$45,083
Transfer	$259,239	$59,187	$700	$419
TOTAL	**$46,281,659**	**$673,830**	**$502,959**	**$71,124**

costs the nation an estimated $7.3 billion per year. Based on this study, the Rennie Center for

Education Research and Policy (2006) reported that other cities have similar teacher turnover

costs:

- Baltimore, Maryland – $10,920,000
- Oakland, California – $12,005,000
- Washington D. C. – $16,598,750
- Louisville, Kentucky – $18,208,750
- Houston, Texas – $35,043,750
- New York City – $115,221,250

Tulsa (591,000) is closest in population to Louisville (556,000). Each of these studies described

a wide variety of teacher turnover costs. Most of them agree that separation, hiring, and training

costs should be considered, and teacher productivity should also play an important role.

Components of Teacher Turnover

Creating a comprehensive model of teacher turnover requires accumulating all the factors

presented in various industrial and educational studies and models mentioned in this chapter. In

the category of *separation costs*, the exit interview and administrative tasks should be considered

(Smith & Watkins, 1978; Cascio, 1991; Pinkovitz et al., 1997; Benner, 2000; Milanowski &

Odden, 2007; Bliss, 2001; BLR, n.d.; Darmon, 1990; HR Chally Institute, n.d.; Wyoming

Department of Workforce Services, n.d.).

For the category of *hiring costs*, advertising, recruiting, application processing,

interviews, reference checks, job offers, criminal background checks, drug testing, stipends,

bonuses, subsidies and other considerations, and administrative tasks are important (Smith &

Watkins, 1978; Cascio, 1991; Pinkovitz et al., 1997; Benner, 2000; Milanowski & Odden, 2007;

NCTAF, 2007; Bliss, 2001; BLR, n.d.; Darmon, 1990; HR Chally Institute, n.d.; Jones, 1999;

Seavey, 1999; Sorensen, 1995; Wyoming Department of Workforce Services, n.d.).

Training costs should include orientation at both the district and school level; mentoring at the school level; pre-service new teacher training at the district, school, and department level; formal and informal in-service new teacher training, including materials; and administrative costs (Smith & Watkins, 1978; Pinkovitz et al., 1997; Benner, 2000; Breaux & Wong, 2003; Milanowski & Odden, 2007; NCTAF, 2007; Bliss, 2001; BLR, n.d.; Darmon, 1990; HR Chally Institute, n.d.; Jones, 1999; Seavey, 1999; Sorensen, 1995; Wyoming Department of Workforce Services, n.d.). Finally, *performance productivity* costs should be calculated using Sorensen's (1995) formula based on 20 percent productivity gains per month, requiring five months to reach full productivity.

$$\text{Cost} = (0.8*\text{monthly salary [MS]}) + (0.6 * \text{MS}) + (0.4 * \text{MS}) + (0.2 * \text{MS})$$

Some studies have also considered performance differential between and departing and replacement staff (Cascio, 1991; Pinkovitz et al., 1997; Milanowski & Odden, 2007; Darmon, 1990) and lost productivity when a more senior staff member is lost (Bliss, 2001; BLR, n.d.; Jones, 1999; Wyoming Department of Workforce Services, n.d.) but this study does not address these costs due to the unavailability of matching data between departing and new teachers. The most important point of discussing how teacher turnover is calculated is that researchers must move away from the estimation game and take a serious look at the individual costs. Only then can a true picture of teacher turnover be drawn.

Summary

These studies have made contributions to the literature by establishing the scope and scale of teacher turnover costs, but important empirical work remains to be done. Calculating the cost of teacher turnover must move to the next level by implementing a protocol for collecting

actual turnover cost data that can provide district and state policymakers with a strong basis for data-based decisions that help them to manage the costs of turnover.

The teaching profession plays a vital role within society. The need and concern for having an adequate supply of teachers has been the intense focus of educational policy since the early 20th century. Finding certified teachers to fill vacancies is more difficult in some types of schools, in some regions of the country, and within some subject areas. A major result of teacher turnover is that poor, urban, and minority children are taught by less experienced, less qualified teachers who "do not stay long enough to become the expert, high-quality teachers their students desperately need" (Alliance for Excellent Education, 1999, p. 9).

The problem of teacher turnover is not new. However, the magnitude of this problem expands when predictions about teacher demand for the future are presented for examination and review. Teacher turnover is costly to students because they lose the value of being taught by an experienced teacher. The first five years for novice teachers are critical. It is costly to districts because more effort and money must be spent on recruitment, replacement, and training of teachers. Additionally, school districts must spend financial resources to provide a comprehensive induction program that includes orientation and mentoring for beginning teachers. Some school districts record teacher turnover rates of 40 to 50 percent within these years. While all school districts have some teacher turnover, urban school districts seem hard-pressed to implement strategies that will stop the acceleration of teacher turnover rates. Despite reform initiatives and efforts that have been implemented across the nation, teacher turnover is still a significant problem for school districts.

CHAPTER 3

DESIGN

Introduction

Teaching is a major occupation, encompassing four percent of the entire nation's workforce. Statistically, the number of K-12 teachers is twice as large as the number of registered nurses and five times greater than the number of lawyers or college professors (U. S. Bureau of the Census, 2007). Unfortunately, novice teachers are exiting the profession at an accelerated rate over the past several decades (Makovec, 2008).

The exit of teachers from the profession and the movement of teachers to better schools are a costly phenomena, both for the students, who lose the value of being taught by an experienced teacher, and to the school and districts, which must recruit and train their replacements (Alliance for Excellent Education, 2005). Reducing teacher turnover and teacher mobility has potentially important implications for school finance (Feng, 2006). Searching for and hiring new teachers is an expensive proposition. A conservative national estimate of the cost of replacing public school teachers who have dropped out of the profession is $2.2 billion a year (Benner, 2000). If the cost of replacing public school teachers who transfer schools is added, the total reaches $4.9 billion every year (see Table 1). For individual states, cost estimates ranged from $8.5 million in North Dakota to $56.3 million in Oklahoma to $504.9 million for Texas (Alliance for Excellent Education, 2005).

Many analysts believe that the price tag is even higher due to the fact that hiring costs vary by district and sometimes include signing bonuses, subject matter stipends, and other recruiting costs specific to hard-to-staff schools. Others believe that the cost of the loss in teacher

quality and student achievement should also be added to the bill (Benner, 2000). The costs of replacing teachers are not as readily apparent because they are not included in a single line item of the superintendent's annual budget (Shockley, Guglielmino, & Watlington, 2005).

However, recognizing the crucial role that teachers play in the students' learning does not lead easily to policies and practices that "ensure each school and classroom will be staffed by an excellent teacher" (Johnson, 2006, p. 2). Even in progressive states with well-financed education systems, many teaching positions remain vacant for months at a time, leaving students to contend with a series of unprepared substitute teachers. Other classrooms are staffed with teachers who are ineffective for a variety of reasons – insufficient training, overwork, low morale, inadequate curriculum and resources. Rapid turnover of successful teachers imposes enormous costs, both financial and organizational, on the schools and those who teach and learn there.

This chapter describes the design of this teacher turnover study. A presentation of data collection procedures and the methodology used to analyze the data are also included. It includes the purpose of study, research questions, research design, context, methodology, data collection, and data analysis.

Purpose of Study

Teacher turnover affects the quality of teachers, restricts planning and program continuity, increases allocations for recruitment and hiring, and impedes student learning (Shen, 1997). School districts throughout the United States continue to address the consequences of teacher turnover. The purpose of this study was to validate a 4-component turnover model by calculating the financial costs of teacher turnover in an urban school district. Because it takes time, energy and money to recruit, hire and train replacing teachers, school districts need to understand the source of these costs, and in our economic times, understand how they impact the

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district budget's bottom line. By having a reliable calculation of teacher turnover costs, districts can more adequately assess the effect of such turnover, and examine the cost-effectiveness of implementing interventions designed to reduce teacher turnover.

The study was conducted in four phases. The first phase was to seek approval to conduct this study from the Tulsa Public Schools (TPS) Research Review Board (Appendix C) and the University of Oklahoma's Institutional Review Board (Appendix B) to conduct this study. The second phase of this study was to build a teacher turnover model based on established models and educational studies on teacher turnover. The third phase consisted of obtaining the appropriate terminated teacher data from the school district and validating the data integrity through conversations with district staff who handle teacher employment tasks. The fourth phase was to develop a detailed analysis of the data. Trend analysis was utilized for this purpose.

Research Questions

This study was driven by three primary factors: the turnover costs and rates at high-poverty, high-minority urban schools, whether the problem was increasing or decreasing, and what were the future projections for teacher turnover. The purpose of this chapter was to describe the procedures utilized in this study to answer the following research questions.

- Research Question 1: What are the financial costs associated with teacher turnover in an urban school district in a mid-sized Southern city in school year (SY) 1999 through SY 2008?

- Research Question 2: To what extent have these costs changed over this period?

- Research Question 3: What are the predicted teacher turnover costs in SY 2010 through SY 2012?

Tulsa Turnover Model

The **Tulsa Turnover Model** (Appendix A) created by this researcher was developed from several business and education models. The idea for the categories of replacement, hiring, and training costs was based on a model from the medical field entitled *Calculation of Annual CNA Turnover Replacement Cost* (Seavey, 2004). This led to the often-referenced business studies that defined the categories of separation costs, hiring costs, and training costs (Smith & Watkins, 1978; Cascio, 1991). The components for each category for this study were based on the landmark *Cost of Teacher Turnover* study in Texas (Benner, 2000) which were defined as:

- *Replacement*: exit interviews, administrative tasks, unemployment taxes

- *Hiring*: advertising, recruiting, travel, professing applicants, interviews, stipends and bonuses, post-employment tasks

- *Training*: orientation, training

These categories were further analyzed by examining several other business models. The first one was Bliss' (2001) *Cost of Employee Turnover*. A fourth category of lost productivity costs was added. The Business and Legal Reports website (n.d.) included placement agency fees, travel expenses, relocation costs, job offers, and new employee paperwork. Finally, the HR Chally Institute (n.d.) added separation pay, moving expenses, medical exams, sign-on bonuses, and salary paid during training.

- *Replacement*: temporary replacement, lost productivity, investment in lost training, impact on productivity, benefits continuation, lost knowledge, cost of vacant position, separation pay

- *Hiring*: drug screens, education background check, criminal background check, reference checks, agency fees, relocation costs, job offers, moving expenses, medical exams, sign-on bonuses

- *Training*: department training, cost of trainer, cost of training materials, cost of reviewing work, salary during training

- *Productivity*: 25% for weeks 2-4, 50% productivity for weeks 5-12, 75% productivity for weeks 13-20, bring employee *up to speed*, cost of employee mistakes, loss of department productivity

After analyzing all of these sources, this researcher subdivided teacher turnover into four areas: (1) separation costs, (2) hiring costs, (3) training costs, and (4) performance productivity.

Separation Costs

Exit interviews and administrative tasks are a critical component of this cost category. Exit surveys and other exit procedures were added to cover all possible sources of information from exiting teachers. Unemployment taxes, temporary replacements, benefits continuation, impact on productivity, and cost of vacant position were discounted because of a lack of relevance to teacher employment. Investment in training lost and lost knowledge were impossible to quantify so these were also discarded. Finally, lost productivity was moved to the fourth category – which was renamed *performance productivity* based on Sorensen's (1995) calculations. Therefore, separation costs were defined as follows:
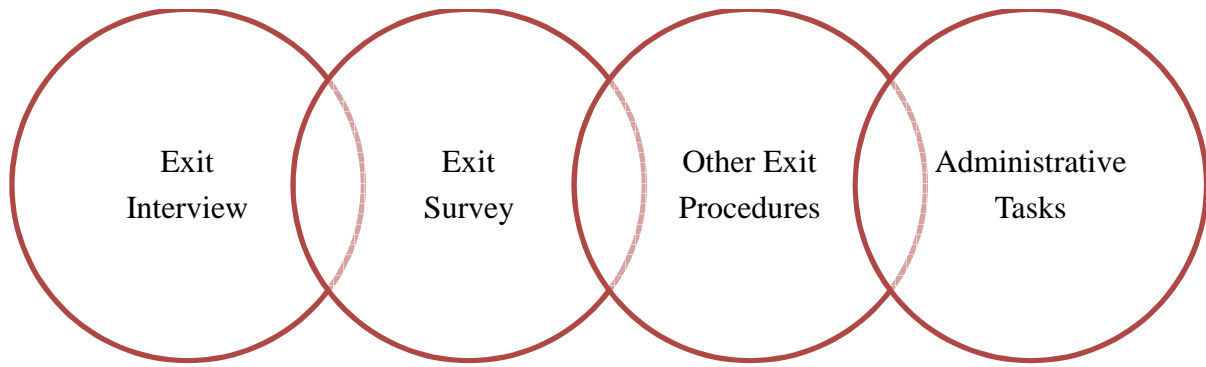
- The components of the *exit* instruments included preparing, conducting, processing and reporting the results.

- The *administrative* tasks covered tasks performed by personnel in the Human Capital, Payroll, Benefits, Professional Development, and Information Systems departments related to separation of teachers from the district.

Hiring Costs

This category of costs was the most difficult to define. Creating advertising for job openings, recruiting potential candidate, processing applications, performing interviews, processing stipends and bonuses, performing post-employment tasks, scheduling drug screens, performing education and criminal background checks, handling reference checks, coordinated agency fees to search for qualified candidates, presenting job offers, scheduling medical exams, and processing sign-on bonuses were all valid costs related to hiring teachers. Although travel, moving expenses, and relocation costs could be considered part of the formula for recruiting administrators, it is not as valid for teacher recruitment. Therefore, hiring costs were defined as:

```
┌─────────┐ ┌─────────┐ ┌─────────────┐ ┌─────────┐
│Advertising│ │Recruiting│ │ Application │ │Interviews│
│         │ │         │ │ Processing  │ │         │
└─────────┘ └─────────┘ └─────────────┘ └─────────┘

┌─────────┐ ┌─────────┐ ┌─────────────┐ ┌─────────┐
│Reference│ │  Job    │ │  Criminal   │ │  Drug   │
│ Checks  │ │ Offers  │ │ Background  │ │ Testing │
│         │ │         │ │   Checks    │ │         │
└─────────┘ └─────────┘ └─────────────┘ └─────────┘

┌─────────┐ ┌─────────┐ ┌─────────────┐ ┌─────────────┐
│         │ │         │ │  Subsidies  │ │Administrative│
│Stipends │ │ Bonuses │ │ and Other   │ │    Tasks    │
│         │ │         │ │Considerations│ │             │
└─────────┘ └─────────┘ └─────────────┘ └─────────────┘
```
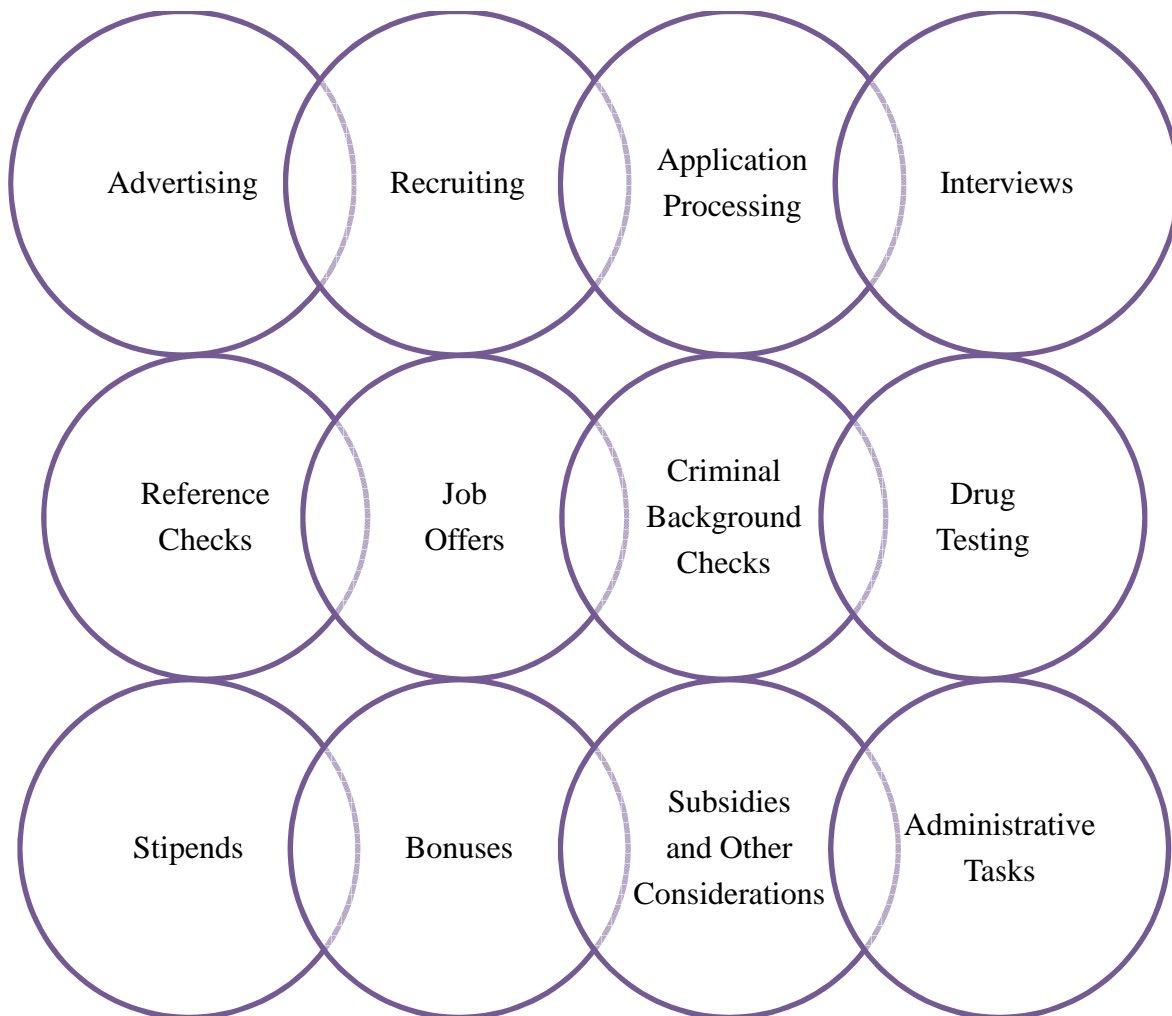
- *Advertising* encompassed the preparing and publishing of job opening for newspapers and the district website.

- *Recruiting* included consultant fees, job postings to employment websites, and organization and presentations at job fairs.

- *Application processing* dealt with those applications mailed to the district or sent online as well as the district's matching process of applicants to positions.

- Another cost was the preparing, conducting, processing and reporting the results of *interviews*.

- The process of *reference checks* included checking references, addressing issues, approving the results, and determining eligibility.

- The processing and the subsequent response activities of *job offers* were by letter, telephone, or other means.

- The process of the *criminal background checks* involved checking the state SBI database, the national NCIC database, addressing issues, approving the results, and determining eligibility.

- To conduct *drug testing* encompassed setting up the test, addressing any issues, analyzing and approving the results, and determining eligibility.

- The *stipends* included shortage areas like mathematics, specialty areas like athletics, and additional areas like academic organizations.

- *Bonuses* were available for signing teachers employed in hard-to-fill positions or shortage areas, and members of certain demographic groups.

- *Subsidies and other considerations* supplemented relocation, housing, living, and education expenses.

- Again, the *administrative* tasks covered tasks performed by personnel in the Human Capital, Payroll, Benefits, Professional Development, and Information Systems departments related to hiring teachers.

Training Costs

Training is important at the district, school and department level to fully prepare newly hired teachers to be productive. Trainers, training materials and substitute teachers to cover classes so that teachers had time to attend training classes were equally important. The cost of

reviewing work was incorporated in mentoring activities. Therefore, training costs were described as:
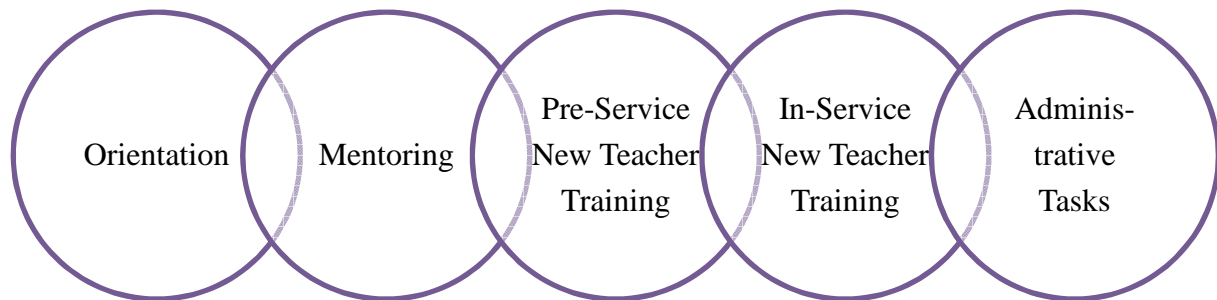
- *Orientation* included trainers and training materials at both the district and school levels.

- *Mentoring* covered the mentor, the substitute teachers to cover classrooms so the mentor and mentee can work together, and any necessary materials.

- *Pre-service* new teacher training was provided by trainers and training materials at the district, school, and department levels.

- *In-service* new teacher training, which included both formal and informal training, was similar to pre-service training but was usually conducted monthly throughout the year.

- An *entry-year* teacher program of some format had been adopted by many states to provide structured support for first-year teachers. The coordinating team included an administrator and teacher-mentor. In addition, substitute teachers were needed to cover the novice teacher's classroom to support the growth of the emerging teacher.

- Again, the *administrative* tasks covered tasks performed by personnel in the Human Capital, Payroll, Benefits, Professional Development, and Information Systems departments related to training teachers.

Performance Productivity

Although Bliss' (2001) model provided an excellent rationale for calculating lost productivity costs, this researcher chose Sorensen's (1995) model as the most valid for teacher productivity concerns. Sorensen's model was defined as:
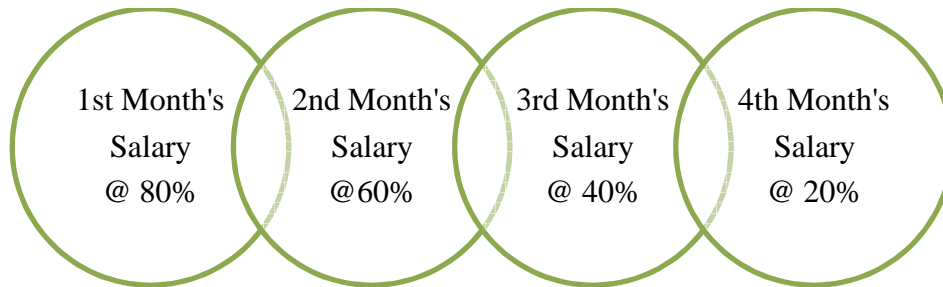
Many of the components of this *Model* have been proven to be viable in other studies (Benner, 2000; ACORN, 2003; NCTAF, 2007b). The development of a consistent model moves away from the estimation game that has characterized business and education studies for the past two decades.

Research Design

The ex post facto method, or causal comparative method, was chosen for this study because it is often used for financial-based studies when the data already exist. The fact that the data already exist does not always mean that they are easy to obtain. As any historian will testify, simply finding out what happened can be difficult – and sometimes impossible. This proved to be the case in this study as some information was not made available to this researcher.

Research question one was addressed by populating the *Model* with employment data from SY 1999 through SY 2008 obtained from the school district's terminated teacher database maintained by the Human Capital department. The information contained in the Tulsa Public

TABLE 10: FIELD DESCRIPTIONS OF TEACHER DATABASE (Part 1)

Source: Tulsa Public Schools (2010)

FIELD NAME	FIELD DESCRIPTION
pay_group_id	Part-time (PT) or Full-Time (FT)
emp_id	5-digit TPS employee number
SSN	9-digit social security number
NAME	Last, First Middle-Initial
POS4	4-digit position code (used in LOOKUP Table to find Position Title)
job_or_pos_id	Prim_disbursal_code + POS4
eff_date	Effective date of last assignment or salary change
POS-TITLE	School type and position in words
hire_date	First date of being paid
original_hire_date	Hire_date unless returned to district
adjusted_service_date	Total time with district. If bridged service, it would be the most recent hire date less how many years gone.
emp_status_code	Active (A) or Terminated (T)
prim_disbursal_loc_code	3-digit school code (LOOKUP Table)
employment_type_code	Same as pay_group_id
eeo_race_code	Asian (AA), American Indian (AI), African American (B), Hispanic (His), Caucasian (W)
HRS-PERDAY	Part-time ($4.00) or Full-time ($8.00)
STD-WORK-HRS	Part-time (732) or Full-time (1464)
STD-WORK-PD	TEAYR
annual_salary_amt	TPS salary schedule based on base_rate_tbl_entry_code and ST-YEARS
pd_salary_amt	Not used unless the employee wants the system to determine the annual salary amount
hourly_pay_rate	annual_salary_amt divided by STD-WORK-HRS
SALARY	Same as annual_salary_amt
base_rate_tbl_id	CERTSTEP
base_rate_tbl_entry_code	Bachelor (B-xx), Masters (M-xx), or Doctorate (D-xx) where xx is the step
pay_through_date	Active (12/31/2999) or Terminated (end of school year date)
pay_status_code	Active (1) or Terminated (2)
prime_assignment_ind	Primary assignment (Y)

FIELD NAME	FIELD DESCRIPTION
work_tm_code	First character of employment_type_code
ST-YEARS	Completed years of teaching
CI	Number of career increments used to determine additional pay after 20 years of service
sex_code	Male (M) or Female (F)
birth_date	Mm/dd/yyyy
COLLEGE	Last college graduated
AOS	Area of study or certification
HQ	How a TA is determined to by highly qualified
CONTYPE	Type of certification: Normal, Alternative (ALT), Teach For America (TFA), Teacher with certification pending (BLANK)
OD-CERT-TYPE	Normal or Alternative
DATECREATED	Last date this record updated

In addition, there are several codes uniquely assigned to terminated employees.

Consider_for_rehire	Y or N
TERMCD	Reason code for termination
TERM_CLASSN	Voluntary or Involuntary
TERMDATE	Last date paid

Schools (TPS) teacher database included the fields in Tables 10 and 11. In addition, the total

yearly cost for teacher turnover was calculated.

Research question two was addressed by generating a graphical representation of the

categories of costs for the *Model* for each year being studied and calculating the yearly turnover

rate. Trend analysis was used to make predictions of teacher turnover costs and rates for the SY

2010 through SY 2012 to answer research question three. The term *trend analysis* refers to the

concept of attempting to determine a pattern, or *trend*, in the data. It is a mathematical technique

that uses historical results to predict future outcome, by tracking variances in cost performance.

Trend analysis can be extremely valuable as an early warning indicator of issues with events that impact districts and schools.

Context

Tulsa Public Schools is a public PreK-12 school district in the northeastern quadrant of Oklahoma (see Figure 3). Because it is the largest district in the state, TPS has experienced

FIGURE 3: MAP OF OKLAHOMA

tremendous change in enrollment in the past several decades. Enrollment peaked at approximately 75,000 students in the early 1970s, but the current enrollment is 41,697, with 61 elementary schools, 14 middle schools, and nine high schools. The district teacher population is comprised of 78.4 percent Caucasian and 14.1 percent African American, with the remaining 7.5 percent divided among Hispanic, Native American, and Asian. These demographics vary from school to school, with certain schools having a much higher minority percentage. The student population consists of 35.9 percent Caucasian, 36.0 percent African American, 19.0 percent Hispanic, 8.2 percent Native American, and 10 percent Asian. With large minority populations in many of its schools and 85 percent of all students qualifying for free or reduced lunch, the demographics at TPS mirror those of other challenged districts across the country (TPS, 2009). Annual Yearly Progress (AYP) data has identified TPS as having some of the highest and lowest performing schools in the state. The school district is also representative of many school districts

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across the nation with challenged finances, and a budget-per-student allocation below the national average for urban districts.

The elementary teaching staff is 92.2 percent female, the middle school staff is 74.5 percent female, and the high school staff is 61.8 percent female. The starting salary for teachers with a bachelor's degree is $32,900 (see Table 12), which places TPS behind other districts in the area whose average starting pay is $34,900. Teachers in this district receive additional compensation for non-performance-based factors including degrees earned, credited years of teaching, and certification such as National Board, rather than their ability to lead students to academic and collegial success. Goldhaber and Anthony (2003) argued, in *Indicators of Teacher Quality*, that mere attainment of a master's degree does not improve student achievement.

Several avenues of teacher recruitment are used, including internal promotion and transfer, early acceptance, employee referral, recruitment firms, teacher recruitment fairs, campus interviews, substitute teachers, internet postings, recruitment trips to out-of-state geographical locations that hold promise for meeting diversity needs, trade publications and local print media. The district's process of early acceptance for teachers has not been as productive as expected. A team of two recruiters attends career fairs at the local universities that offer education degrees but this process has not resulted in acceptable rates of recruitment. Of the 209 early offers extended, less than 33% (69 applicants) began teaching in the district and less than 22% (47 applicants) are still in the district after two years (TPS, 2008). Additionally, in 2007-2008, TPS hosted 51 student- teachers, but only 18% (nine teachers) accepted teaching positions and are still teaching in the district after two years (TPS, 2009, p. 33).

TABLE 12: TEACHER SALARY SCHEDULE
Source: Tulsa Public Schools (2010)

Step	Bachelors	Masters	M+30	M+60	Doctorate
0	32,900	33,956	34,964	36,005	37,105
1	33,300	34,366	35,384	36,605	37,705
2	33,700	34,776	35,794	37,015	38,115
3	34,100	35,176	36,194	37,415	38,515
4	34,500	35,576	36,694	37,825	38,925
5	34,900	35,976	37,094	38,235	39,335
6	35,300	36,376	37,494	38,635	39,735
7	35,700	36,796	37,914	39,045	40,145
8	36,300	37,406	38,524	39,645	40,745
9	36,800	37,916	39,034	40,155	41,255
10	37,200	38,326	39,444	40,555	41,655
11	37,610	38,986	40,614	42,255	43,335
12	38,020	39,476	41,114	42,725	43,825
13	38,660	40,286	41,914	43,545	44,645
14	39,370	41,206	42,834	44,455	45,555
15	40,190	42,216	43,844	45,475	46,575
16	40,800	42,936	44,864	46,485	47,585
17	42,220	44,406	46,434	48,085	49,161
18	43,430	45,016	47,154	48,785	49,881
19	43,930	45,526	47,714	49,335	50,441
20	44,430	46,736	48,374	49,995	51,101
21	45,130	47,236	49,134	50,755	51,861
22		47,736	50,344	51,975	53,071
23		48,436	50,844	52,475	53,571
24			51,544	53,175	54,271
25			52,044	53,675	54,771

Tulsa Public Schools also has problems with its interview methodology. The interview process for all teacher applicants involves at least one interview, generally with a team of interviewers and, in some cases, a follow-up interview. Prior to extending a contract, TPS requires a physical, educational level verification, criminal background checks, and drug

screenings. The lengthy process often results in the loss of potential candidates with excellent qualifications (TPS, 2009).

The school district also prides itself on its mentoring activities, technology training, pre-service and monthly in-service professional development, and curriculum and instruction support (TPS, 2008). However, according to Professional Development trainers, there are issues with Human Capital informing newly hired teachers about the availability of professional development opportunities. Still, TPS must fill "400 to 500 positions" (15.2 percent of the teacher workforce) each school year (TPS, 2009, p. 33). Clearly, TPS is a district with problems in its selection, training, and retention of its teachers. It is important to explore the impact of these deficiencies.

Methodology

Research Question One

The researcher created the ***Model*** to calculate the separation costs, hiring costs, training costs, and performance productivity of teachers between SY 1999 and SY 2008.

1. The first step was to calculate the costs of ***separation*** for the outgoing teacher, which included exit interviews, exit surveys, other exit procedures, and administrative tasks.

2. The second step was to calculate the costs of ***hiring*** the new teacher, which included advertising, recruiting, application processing, interviews, reference checks, job offers, criminal background checks, drug testing, stipends, bonuses, subsidies and other considerations, and administrative tasks.

3. The third step was to calculate the costs of ***training*** the newly-hired teacher, which included orientation, mentoring, pre-service new teacher training, in-service new teacher training, and entry-year teacher program.

4. The fourth step was to calculate the ***performance productivity*** of teachers using Sorensen's (1995) formula: 80 percent of the first month's salary and 60 percent of the second month's salary and 40 percent of the third month's salary and 20 percent of the fourth month's salary.

These calculations resulted in the yearly teacher turnover costs.

Research Question Two

To determine the change in costs over that period, the yearly turnover rate was calculated by dividing the total count of teachers leaving by the total number of teachers in the district. In addition, a graphical representation was created to track the changes over time to assist in the trend analysis conducted to answer research question three.

Research Question Three

Trend analysis using Microsoft Excel was calculated as follows:

1. The first step was to create a line graph of the teacher turnover costs. The cost amounts were displayed in millions to make readability easier. Data labels were attached to establish a point of reference.

2. The second step was to enter Chart Tools – Layout mode. On the Layout tab, Trendline was selected on the Analysis group.

3. The third step was to select Linear Trendline and specify a Forecast of five forward (in the future) periods. That displayed five years into the future.

4. The final step was to label the resulting linear line based on the projected results.

The same process was followed to create a trend line for teacher turnover rates.

Data Collection

All of the certified teachers in the study were employed by the Tulsa Public Schools district for various lengths of service between SY 1999 and SY 2008. Data were collected from the terminated teacher database maintained by the Human Capital department and data integrity was verified through conversations with employees of Human Capital, Payroll, Benefits, Information Systems, and Professional Development departments who handle teacher employment tasks.

The objective of the conversations with district staff in Human Capital, Payroll, Benefits, Professional Development, and Information Systems were two-fold. First, the conversations with department heads were fact-finding in nature to determine which department staff handled tasks related to teacher employment. The task-specific categories of the *Model* were used as a template to identify which tasks were being analyzed. Second, once the appropriate person was identified, salaries and timelines per task were identified, resulting in a financial cost per task.

Data Analysis

Research question one was answered by populating the *Model* and calculating the total turnover cost for SY 1999 through SY 2008. Research question two was answered by calculating the yearly turnover rate and graphically representing the results of research question one. Research question three projected the teacher turnover costs and rates for SY 2010 through SY 2012 using trend analysis.

Organization of Study

The rest of this study was organized in the following chapters. Chapter Four reported the results of the study for SY 1999 through 2008, and projected the teacher turnover rate and costs

for SY 2010 through 2012. Chapter Five completed the study with the summary, conclusion,

implications and recommendations pertaining to the research.

CHAPTER 4

DATA ANALYSIS

Introduction

The purpose of this study was to validate a 4-component turnover model by calculating the financial costs of teacher turnover in an urban school district. Because staffing schools is the single largest expense of most school districts, the departure of teachers is a loss of the school district's investment that goes beyond a dollar figure (O'Brien, 2007). It is a loss in experience, staff development, and knowledge of the community.

The following research questions guided this study:

- Research Question 1: What are the financial costs associated with teacher turnover in an urban school district in a mid-sized Southern city between school year (SY) 1999 and SY 2008?

- Research Question 2: To what extent have these costs changed over this period?

- Research Question 3: What are the predicted teacher turnover costs for SY 2010 through SY 2012?

Presentation of Findings

This chapter outlines the results of data analyses in this study. The first part describes demographic information regarding the teachers. The second part of this chapter provides statistical analyses about the terminated teacher data obtained from the district teacher employment database, and verified data integrity through conversations with employees of Human Capital, Payroll, Benefits, Information Systems, and Professional Development

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departments who handled teacher employment tasks. The last part included a summary and what conclusions could be drawn from these analyses.

Data Collection Methods

After receiving approval for research through Tulsa Public Schools' (TPS) Project Management Office (Appendix C), a snapshot of the terminated teacher database was received in the form of a Microsoft Excel spreadsheet for SY 1999 through SY 2008. On closer examination, the data provided to this researcher did not include gender and race. A second snapshot of the database was requested but the new spreadsheet only contained terminated teacher data from SY 2003 through SY 2008. The discrepancy was explained by the district that this researcher's original request had only specified five years of data. The key fields in the database included the position title, position code, hire date, termination date, school code, race, level of education, years of teaching experience, and gender. To verify the data integrity, conversations were held with personnel in Human Capital, Payroll, Benefits, Professional Development, and Information Systems whose job responsibilities involved handling teacher employment tasks.

Demographic Characteristics

In SY 2008, there were 1,804 elementary school (59.4%) teachers serving 23,360 students; 568 middle school (18.7%) teachers serving 7,350 students; and 664 high school (21.9%) teachers serving 8,739 students – for a total of 39,449 students. All of the teachers in this study (*n*=3,157) were employed by TPS for various lengths of service between SY 1999 and SY 2008. Demographic characteristics of gender, race, level of education, and job title were analyzed for each teacher. Figure 4 displays the terminated teachers by gender. As previously discussed, gender data was only available starting in SY 2003. Of the 2,165 terminated teachers from SY 2003 to SY 2008, there were 443 males (20.46%) and 1,721 females (79.49%).

FIGURE 4: TERMINATED TEACHERS BY GENDER
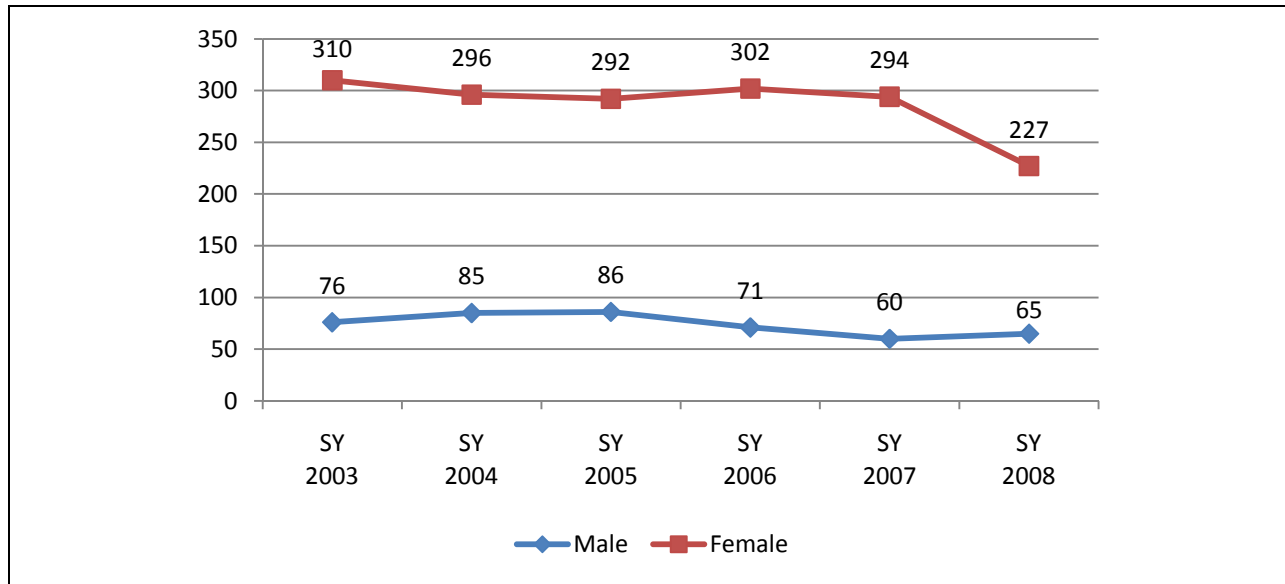
Figure 5 displays the terminated teachers by race. Similar to the gender data, the race data was only available starting in SY 2003. Of the 2,165 terminated teachers from SY 2003 to SY 2008, there were 1,801 Caucasians (83.19%), 185 African Americans (8.55%), 46 Hispanics (2.12%), 115 Native Americans (5.31%), and 15 Asian Americans (0.69%).

Figure 6 displays the level of education for the terminated teachers. There were 1,883 (59.65%) teachers with a bachelor's degree, 626 teachers with a master's degree (19.83%), 140 teachers with a master's degree plus 30 hours (4.43%), 131 teachers with a master's degree plus 60 hours (4.15%), and 50 teachers with a doctoral degree (1.58%). There were 327 records where no degree was specified, representing 10.36 percent of the 3,157 teachers in the database.

There were several subgroups of job titles worth noting. Figure 7 displays the terminated special education teachers. There were 414 terminated special education teachers (13.11%), of which 166 were elementary teachers (5.26%), 136 were middle school teachers (4.31%), and 99 were high school teachers (3.14%). The rest were alternative education teachers. It is interesting

FIGURE 5: TERMINATED TEACHERS BY RACE

	Caucasian	African American	Hispanic	American Indian	Asian American
SY 2003	335	24	7	17	2
SY 2004	316	37	8	18	1
SY 2005	325	28	7	18	
SY 2006	302	39	7	20	5
SY 2007	285	36	6	25	2
SY 2008	238	21	11	17	5
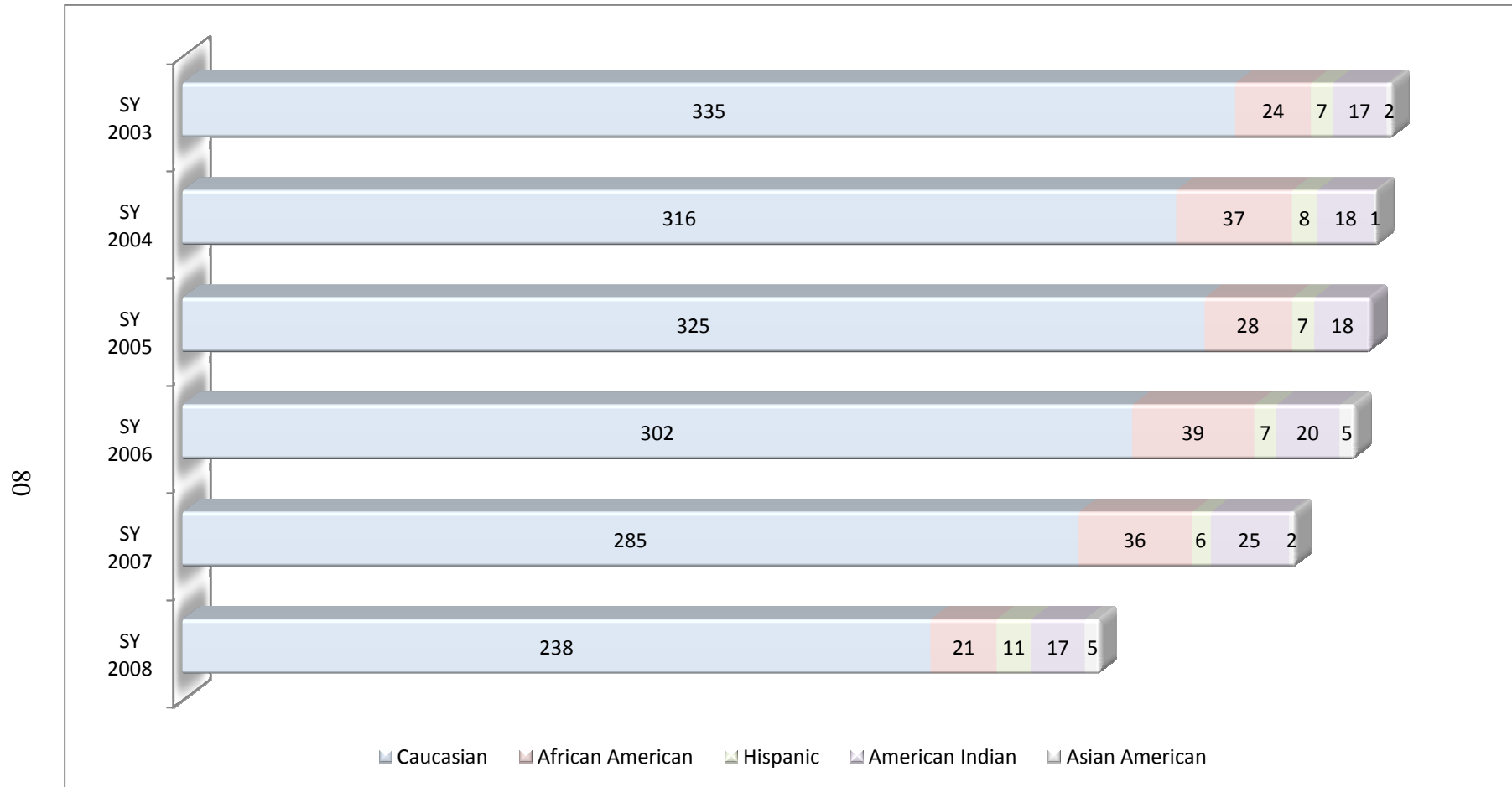
FIGURE 6: TERMINATED TEACHERS BY LEVEL OF EDUCATION

	Bachelors	Masters	Masters + 30	Masters + 60	Doctorate
SY 1999	145	50	14	15	3
SY 2000	183	50	6	14	6
SY 2001	156	60	12	9	6
SY 2002	176	55	9	15	7
SY 2003	207	72	21	16	4
SY 2004	228	62	18	12	5
SY 2005	208	75	14	11	3
SY 2006	211	79	13	13	7
SY 2007	197	76	19	17	6
SY 2008	172	47	14	9	3
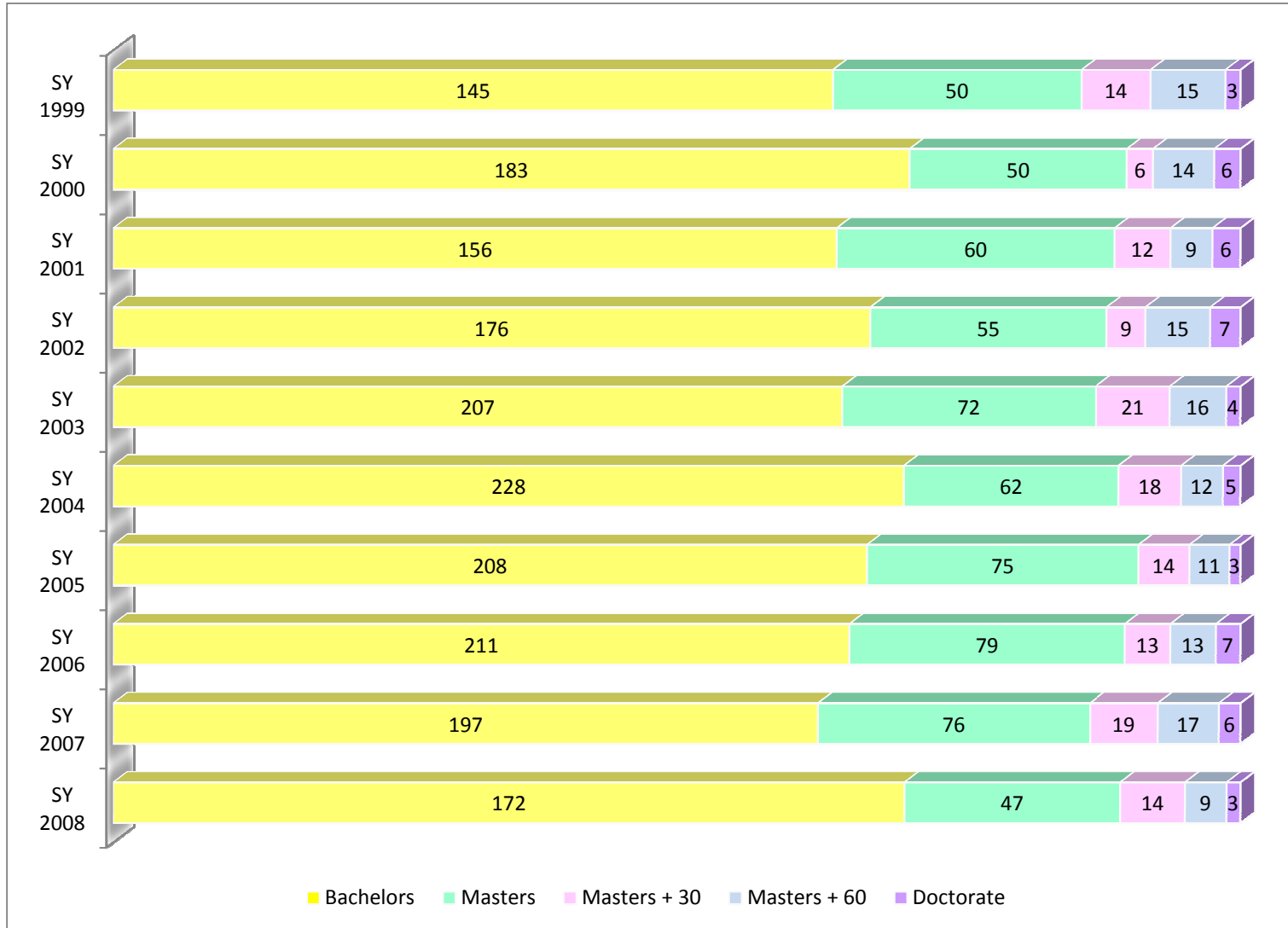
FIGURE 7: TERMINATED SPECIAL EDUCATION TEACHERS
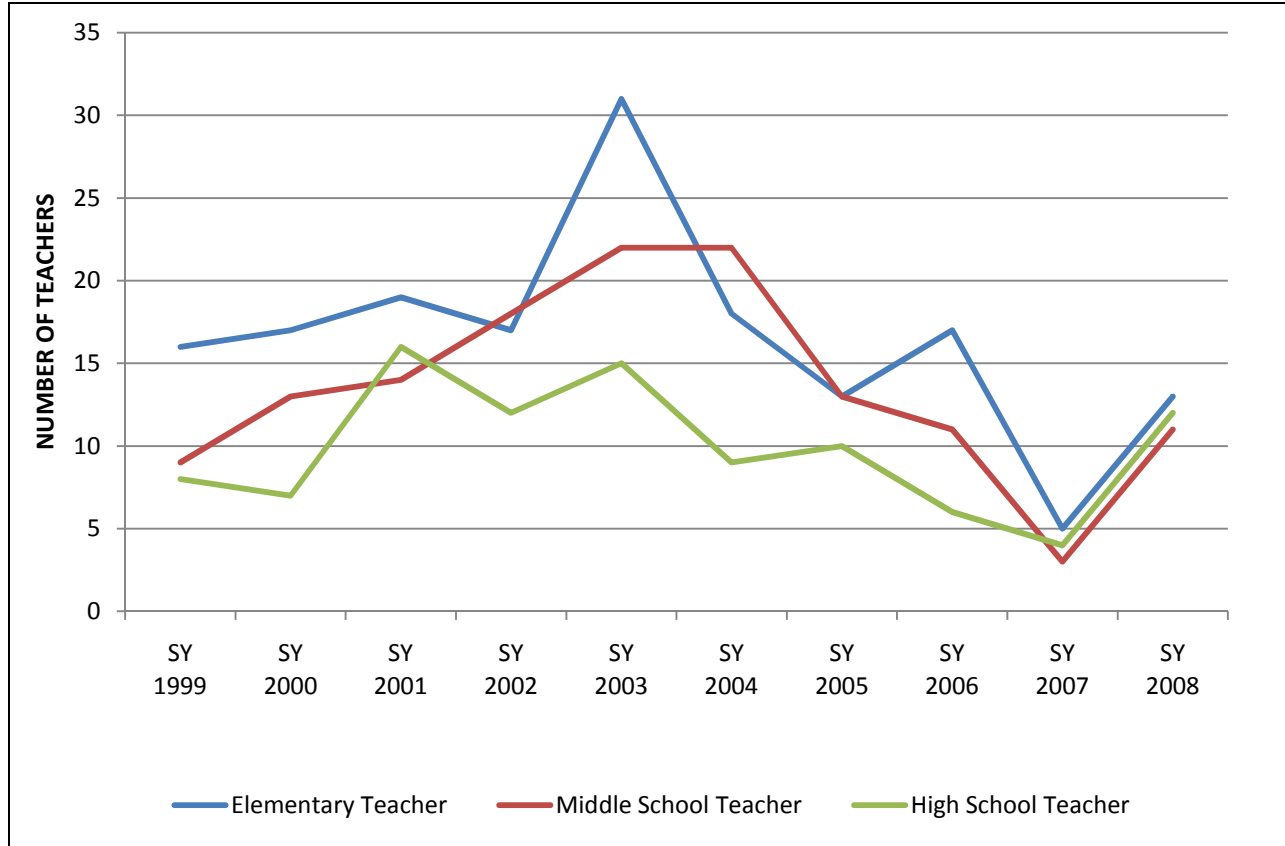
to note that the high school line was mostly constant, the middle school had some fluctuation, and the high school had the most fluctuation.

There were 2,038 terminated regular education classroom teachers (64.55%), of which 52 were pre-kindergarten teachers (1.65%), 148 kindergarten teachers (4.69%), 832 elementary teachers (26.35%), 493 middle school teachers (15.62%), 465 high school teachers (14.73%), and 48 alternative education teachers (1.52%). The rest of the terminated teachers were spread among counselors, deans, special education certified staff (such as speech pathologists), and specialized teachers (such as Indian Education and ELL). All terminated teachers by job title,

TABLE 13: TURNOVER RATES BY JOB TITLE (Part 1)

CODE	DESCRIPTION	SY 1999	SY 2000	SY 2001	SY 2002	SY 2003	SY 2004	SY 2005	SY 2006	SY 2007	SY 2008		
0110	Principal Intern							2				**2**	0.06%
0200	Counselor High School	2	1	3	2		2	3	6	1	1	**21**	0.67%
0201	Counselor Middle School	3	5	3		1	1	3	3	3	3	**25**	0.79%
0202	Counselor Elementary	3	4		7	1	4	2	4	3	7	**35**	1.11%
0203	Dean High School	3	1			1			1			**6**	0.19%
0204	Dean Middle School			2		1		1	1		1	**6**	0.19%
0209	Alternative School Counselor			1	1				1	1		**4**	0.13%
0300	Librarian	4	9	4	3	8	2	8	3		2	**43**	1.36%
0400	Nurse	2	3	3	2	3	4	4	13	4	2	**40**	1.27%
0404	School Nurse Liaison								1			**1**	0.03%
0405	Nurse Supervisor						1					**1**	0.03%
0600	Elementary Teacher	64	66	73	71	108	106	110	107	40	87	**832**	26.35%
0600a	ESL Elementary Teacher		1	1	1		1					**4**	0.13%
0601	Gifted And Talented Teacher		1	1	2	1	1	1	3	2	5	**17**	0.54%
0602	Vocational Teacher	2	3	2	5	11	7	4	2	5	6	**47**	1.49%
0603	Leadership Teacher	3	1			1	1	1	2		2	**11**	0.35%
0604	Alternative School Teacher	4	1	2	4	13	5	5	7	3	4	**48**	1.52%
0609	Teacher Trainers					1						**1**	0.03%
0611	Middle School Teacher	32	51	31	37	62	71	67	66	25	51	**493**	15.62%
0612	High School Teacher	52	50	41	51	45	51	61	54	20	40	**465**	14.73%
0612	Special Programs Teacher							1				**1**	0.03%
0613	Kindergarten Teacher	12	13	9	11	24	17	20	25	8	9	**148**	4.69%
0614	Pre-Kindergarten Teacher	2	2	6	2	6	5	10	7	5	7	**52**	1.65%
0615	Head Start Teacher		1	3			1					**5**	0.16%
0618	TERM Teacher		2	4	4	12	11	17		196	1	**247**	7.82%
0621	Certified Lab Instructor									1	2	**3**	0.10%
0622	Non-Certified Lab Instructor				1	2						**3**	0.10%
0628	4-year old program Teacher					1						**1**	0.03%
0630	Resource Teacher - 9 month				2		1		1			**4**	0.13%
0633	New Teacher Coach						1					**1**	0.03%
0634	Reading Coach				1	2					3	**6**	0.19%

TABLE 14: TURNOVER RATES BY JOB TITLE (Part 2)

CODE	DESCRIPTION	SY 1999	SY 2000	SY 2001	SY 2002	SY 2003	SY 2004	SY 2005	SY 2006	SY 2007	SY 2008		
0635	Math Coach					1		1				**2**	0.06%
0636	ELL Teacher Coach						1					**1**	0.03%
0639	Literacy Coach					1	4				1	**6**	0.19%
0639	Literacy Coach					1	4				1	**6**	0.19%
0639	Literacy Coach					1	4				1	**6**	0.19%
0640	ELL Teacher					2	16	5	8	3	1	**35**	1.11%
0645	Unassigned Teacher									3		**3**	0.10%
0646	Instructional Facilitators - Title I & II								4	1		**5**	0.16%
0648	Math Specialist/Interventionist								1		1	**2**	0.06%
0649	Reading Specialist/Interventionist								2	1	1	**4**	0.13%
0650	Science Resource Teacher								1	1	1	**3**	0.10%
1000	Substitute Teachers						1			1		**2**	0.06%
1400	Elementary Sp Ed Teacher	16	17	19	17	31	18	13	17	5	13	**166**	5.26%
1401	Speech Pathologist		2	3	5	7	6	3	10	2	1	**39**	1.24%
1403	Psychologist	2	1	1	1		3	1		3	2	**14**	0.44%
unk	Psychometrist	2										**2**	0.06%
1406	Middle School Sp Ed Teacher	9	13	14	18	22	22	13	11	3	11	**136**	4.31%
1407	High School Sp Ed Teacher	8	7	16	12	15	9	10	6	4	12	**99**	3.14%
1407a	do not use	1				1						**2**	0.06%
1408	Alternative School Sp Ed Teacher		1		1	1		2			8	**13**	0.41%
1412	Behavior Coach, NC - 190 Days							1		2		**3**	0.10%
1413	Itinerant DD Program Teacher								2	1		**3**	0.10%
1414	District Homebound Teacher									1		**1**	0.03%
1602	Indian Education Resource Advisor						1	1				**2**	0.06%
1646	Resource Specialist, ELL									1		**1**	0.03%
1652	Curriculum Specialist-Social Studies										1	**1**	0.03%
5802	Leave of Absence/Med., Family						7	7	5	5	6	**30**	0.95%
VPOS	Conversion Position						2					**2**	0.06%
unk	Other – not specified	1	3	1	2							**7**	0.21%
		227	**259**	**243**	**263**	**386**	**382**	**378**	**373**	**354**	**292**	**3157**	

including turnover rates, are displayed in Tables 13 and 14. While middle school and high school percentages remained constant year after year, elementary had major fluctuations in SY 2003 and SY 2007.

Historical Database

To study teacher turnover, the historical database was utilized to compare the findings to the review of literature. The literature on teacher turnover had consistently shown a bimodal curve: most of those who leave in any given year are either disillusioned beginners with less than five years in the classroom or mid-life veterans who are ready to retire (Tye & O'Brien, 2002; Shen, 1997; Grissmer & Kirby, 1991).

The data in this study reflects a similar U-shaped curve as established in the literature (Whitener, 1965; Grissmer & Kirby, 1986) – "high turnover occurring in the first five years of teachers, low turnover in the middle years, and the number of exits gradually increasing up to the age at which most teachers retire" (Watson, 2000, p. 93). Starting in the 17th year of service, the number of terminated teachers in this study begins to increase (see Figure 8).

Table 15 displays turnover rates by years of experience. There were 327 records with no value in this field, reducing the total number of teachers from 3,157 to 2,830. The total percentage of terminated teachers with five or less years of service (48.91%) corresponds to the national average of 50 percent of teachers leaving within the first five years (NCTAF, 2003; Ingersoll, 2003b).

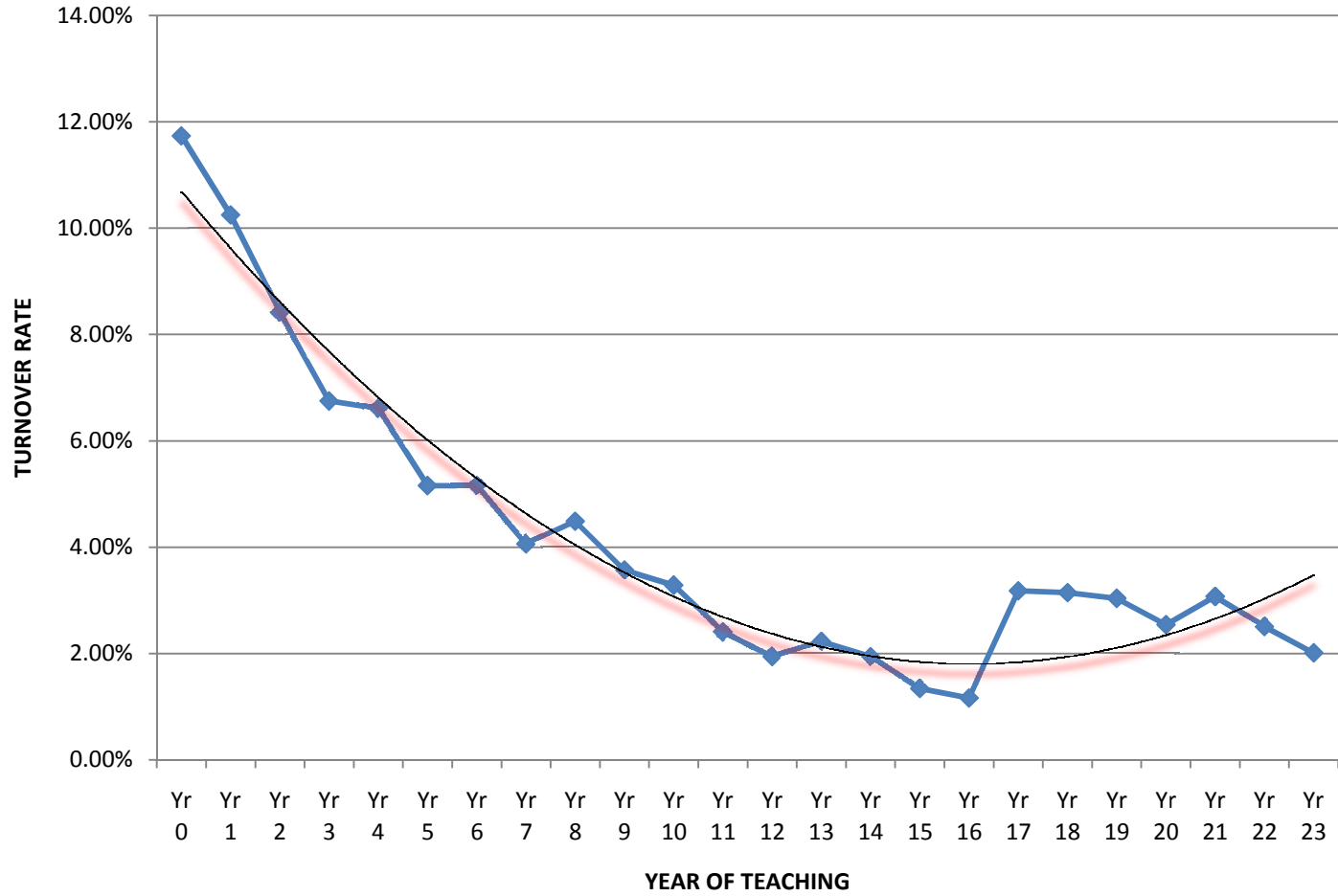# FIGURE 8: U-SHAPED CURVE BASED ON TURNOVER RATES

TABLE 15: TURNOVER RATES BY YEARS OF EXPERIENCE

YR	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		
0	19	26	22	29	19	45	52	43	37	40	**332**	11.73%
1	25	36	21	45	18	20	40	32	27	26	**290**	10.25%
2	24	24	30	21	34	15	17	27	27	19	**238**	8.41%
3	17	24	18	18	22	21	18	10	24	19	**191**	6.75%
4	17	21	12	18	22	22	25	16	17	17	**187**	6.61%
5	16	14	10	7	17	21	13	25	16	7	**146**	5.16%
6	15	21	11	8	15	14	19	18	15	10	**146**	5.16%
7	13	10	9	6	10	21	12	16	13	5	**115**	4.06%
8	13	11	14	17	12	15	12	12	17	4	**127**	4.49%
9	9	8	15	9	16	9	9	10	12	4	**101**	3.57%
10	11	5	6	9	16	13	8	6	11	8	**93**	3.29%
11	1	6	6	11	15	8	5	5	6	5	**68**	2.40%
12	4	1	6	6	8	7	8	7	3	5	**55**	1.94%
13	7	3	7	2	11	6	11	9	6	1	**63**	2.23%
14	5	4	7	2	3	8	8	9	7	2	**55**	1.94%
15	4	4		4	4	5	5	2	3	7	**38**	1.34%
16	1	1	2	1	5	3	3	8	6	3	**33**	1.17%
17	7	19	21	21	4	6	4	2	3	3	**90**	3.18%
18	1		2	4	25	32	14	4	4	3	**89**	3.14%
19	7	8	8	8	5	1	1	24	20	4	**86**	3.04%
20	1		1		19	17	13	4	1	16	**72**	2.54%
21	10	13	15	16				13	18	2	**87**	3.07%
22					20	16	14	4	0	17	**71**	2.51%
23								17	22	18	**57**	2.01%
	227	**259**	**243**	**262**	**320**	**325**	**311**	**323**	**315**	**245**	**2830**	

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Research Question #1:

What are the financial costs associated with teacher turnover in an urban school district in a mid-sized Southern city between SY 1999 and SY 2008?

Utilizing the terminated teacher database provided by TPS and verifying the data integrity in conversations with district staff of Human Capital, Payroll, Benefits, Information Systems, and Professional Development departments who are responsible for performing tasks related to teacher employment, costs were calculated for separation costs, hiring costs, training costs, and performance productivity based on the **Tulsa Turnover Model** (Appendix A). Tables 16 and 17 summarize the total teacher turnover costs by year.

Separation costs averaged 2.29 percent, hiring costs averaged 8.64 percent, training costs averaged 48.15 percent, and performance productivity averaged 40.92 percent. This results in an average per-leaver cost of $14,508.86 based on the following yearly per-leaver costs (Figure 9).

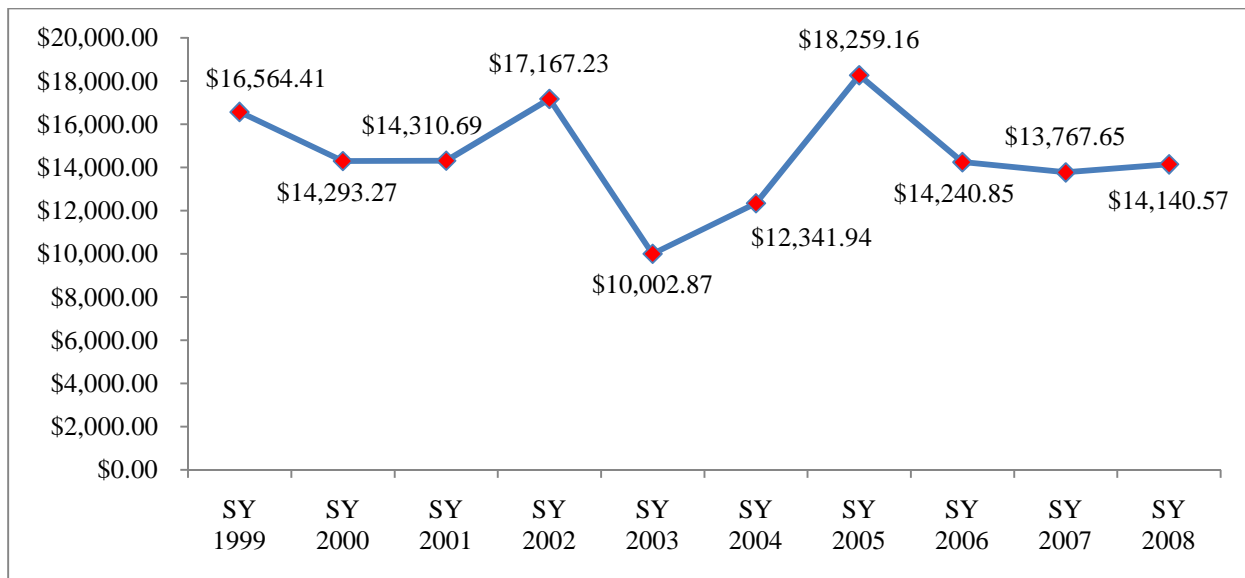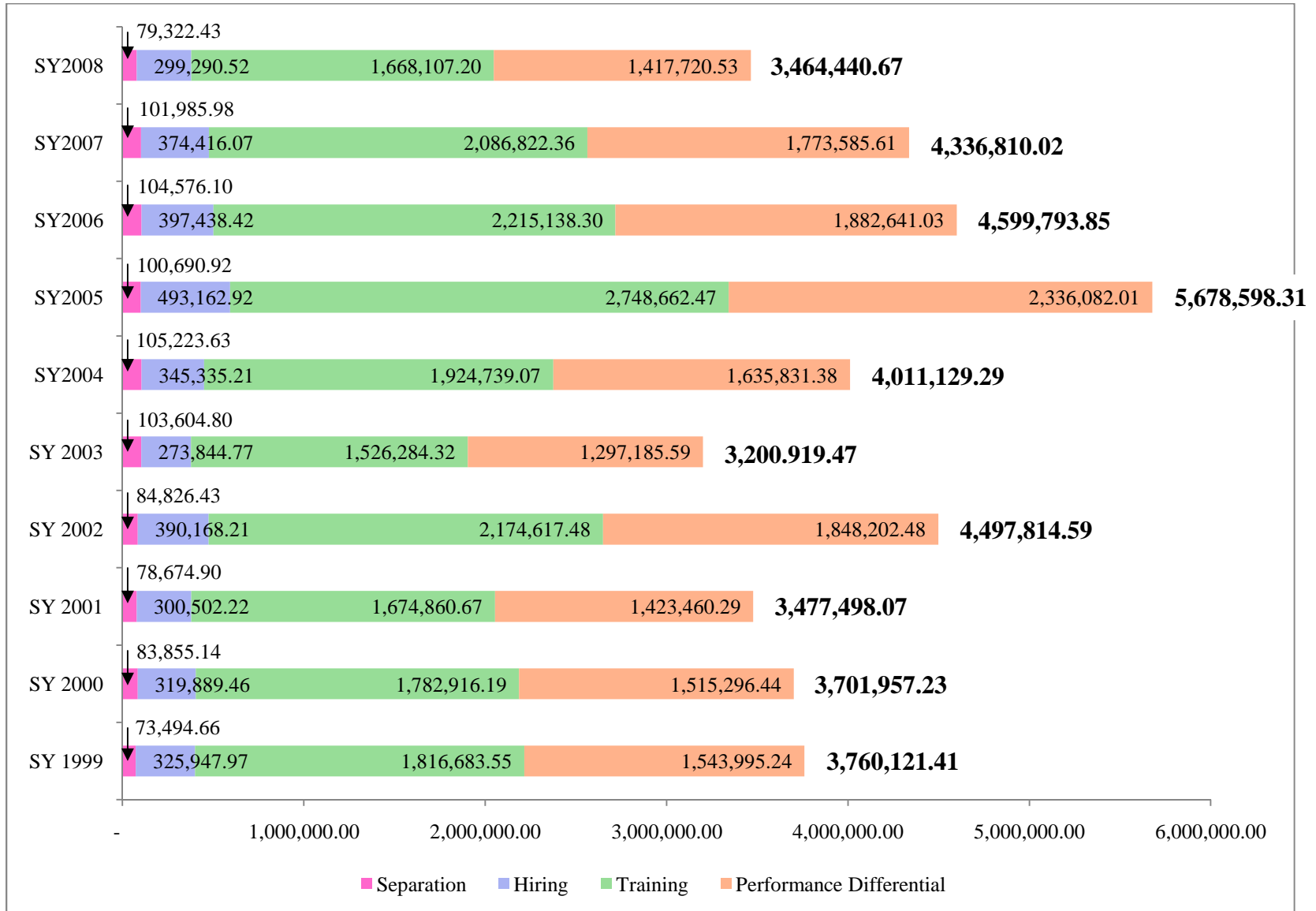### FIGURE 9: PER-LEAVER COSTS BY YEAR

TABLE 16: TOTAL TURNOVER COSTS BY YEAR (Part 1)

	SY 1999	SY 2000	SY 2001	SY 2002	SY 2003
SEPARATION COSTS					
Exit Interview	27,743.94	31,654.98	29,699.46	32,021.64	39,110.40
Exit Survey	23,820.25	27,178.17	25,499.21	27,492.97	33,579.20
Other Exit Procedures	10,757.53	12,274.01	11,515.77	12,416.18	15,164.80
Administrative Tasks	11,172.94	12,747.98	11,960.46	12,895.64	15,750.40
TOTAL	**73,494.66**	**83,855.14**	**78,674.90**	**84,826.43**	**103,604.80**
PERCENT	1.95%	2.27%	2.26%	1.89%	3.24%
HIRING COSTS					
Advertising	27,246.34	26,739.90	25,119.30	32,614.58	22,890.98
Recruiting	96,611.35	94,815.60	89,069.20	115,646.30	81,167.90
Application Processing	6,373.96	6,255.48	5,876.36	7,629.79	5,355.07
Interviews	54,876.00	53,856.00	50,592.00	65,688.00	46,104.00
Reference Check	60,363.60	59,241.60	55,651.20	72,256.80	50,714.40
Job Offer	23,602.06	23,163.36	21,759.52	28,252.28	19,829.24
Criminal Background Check	14,224.72	13,960.32	13,114.24	17,027.36	11,950.88
Drug Testing	10,582.46	10,385.76	9,756.32	12,667.48	8,890.84
Stipends	6,940.20	6,811.20	6,398.40	8,307.60	5,830.80
Bonuses	9,253.60	9,081.60	8,531.20	11,076.80	7,774.40
Subsidies & Other	9,253.60	9,081.60	8,531.20	11,076.80	7,774.40
Administrative Tasks	6,620.09	6,497.04	6,103.28	7,924.42	5,561.86
TOTAL	**325,947.97**	**319,889.46**	**300,502.22**	**390,168.21**	**273,844.77**
PERCENT	8.67%	8.64%	8.64%	8.67%	8.56%
TRAINING COSTS					
Orientation	162,930.61	159,902.16	150,211.12	195,032.18	136,885.94
Mentoring	358,630.80	351,964.80	330,633.60	429,290.40	301,303.20
Pre-Service Training	107,895.90	105,890.40	99,472.80	129,154.20	90,648.60
In-Service Training	1,128,802.01	1,107,820.56	1,040,679.92	1,351,205.38	948,361.54
Entry-Year Teacher Program	41,140.98	40,376.27	37,929.23	49,246.82	34,564.54
Administrative Tasks	17,283.25	16,962.00	15,934.00	20,688.50	14,520.50
TOTAL	**1,816,683.55**	**1,782,916.19**	**1,674,860.67**	**2,174,617.48**	**1,526,284.32**
PERCENT	48.31%	48.16%	48.16%	48.35%	47.68%
PERFORMANCE PRODUCTIVITY					
1st Month @ 80%	617,598.09	606,118.58	569,384.12	739,280.99	518,874.24
2nd Month @ 60%	463,198.57	454,588.93	427,038.09	554,460.74	389,155.68
3rd Month @ 40%	308,799.05	303,059.29	284,692.06	369,640.50	259,437.12
4th Month @ 20%	154,399.52	151,529.64	142,346.03	184,820.25	129,718.56
TOTAL	**1,543,995.24**	**1,515,296.44**	**1,423,460.29**	**1,848,202.48**	**1,297,185.59**
PERCENT	41.06%	40.93%	40.93%	41.09%	40.53%
TOTAL TURNOVER	**3,760,121.41**	**3,701,957.23**	**3,477,498.07**	**4,497,814.59**	**3,200,919.47**

TABLE 17: TOTAL TURNOVER COSTS BY YEAR (Part 2)

	SY 2004	SY 2005	SY 2006	SY 2007	SY 2008
SEPARATION COSTS					
Exit Interview	39,721.50	38,010.42	39,477.06	38,499.30	29,943.90
Exit Survey	34,103.88	32,634.79	33,894.01	33,054.53	25,709.08
Other Exit Procedures	15,401.75	14,738.29	15,306.97	14,927.85	11,610.55
Administrative Tasks	15,996.50	15,307.42	15,898.06	15,504.30	12,058.90
TOTAL	**105,223.63**	**100,690.92**	**104,576.10**	**101,985.98**	**79,322.43**
PERCENT	2.62%	1.77%	2.27%	2.35%	2.29%
HIRING COSTS					
Advertising	28,866.94	41,224.01	33,222.30	31,297.84	25,018.01
Recruiting	102,357.75	146,174.05	117,801.20	110,977.35	88,710.05
Application Processing	6,753.08	9,643.87	7,771.96	7,321.76	5,852.67
Interviews	58,140.00	83,028.00	66,912.00	63,036.00	50,388.00
Reference Check	63,954.00	91,330.80	73,603.20	69,339.60	55,426.80
Job Offer	25,005.90	35,710.18	28,778.72	27,111.66	21,671.78
Criminal Background Check	15,070.80	21,522.16	17,344.64	16,339.92	13,061.36
Drug Testing	11,211.90	16,011.38	12,903.52	12,156.06	9,716.98
Stipends	7,353.00	10,500.60	8,462.40	7,972.20	6,372.60
Bonuses	9,804.00	14,000.80	11,283.20	10,629.60	8,496.80
Subsidies & Other	9,804.00	14,000.80	11,283.20	10,629.60	8,496.80
Administrative Tasks	7,013.85	10,016.27	8,072.08	7,604.49	6,078.67
TOTAL	**345,335.21**	**493,162.92**	**397,438.42**	**374,416.07**	**299,290.52**
PERCENT	8.61%	8.68%	8.64%	8.63%	8.64%
TRAINING COSTS					
Orientation	172,621.65	246,515.83	198,666.32	187,158.21	149,605.43
Mentoring	379,962.00	542,612.40	437,289.60	411,958.80	329,300.40
Pre-Service Training	114,313.50	163,247.70	131,560.80	123,939.90	99,071.70
In-Service Training	1,195,942.65	1,707,890.03	1,376,383.12	1,296,653.61	1,036,483.63
Entry-Year Teacher Program	43,588.02	62,246.76	50,164.46	47,258.59	37,776.29
Administrative Tasks	18,311.25	26,149.75	21,074.00	19,853.25	15,869.75
TOTAL	**1,924,739.07**	**2,748,662.47**	**2,215,138.30**	**2,086,822.36**	**1,668,107.20**
PERCENT	47.98%	48.40%	48.16%	48.12%	48.15%
PERFORMANCE PRODUCTIVITY					
1st Month @ 80%	654,332.55	934,432.80	753,056.41	709,434.24	567,088.21
2nd Month @ 60%	490,749.42	700,824.60	564,792.31	532,075.68	425,316.16
3rd Month @ 40%	327,166.28	467,216.40	376,528.21	354,717.12	283,544.11
4th Month @ 20%	163,583.14	233,608.20	188,264.10	177,358.56	141,772.05
TOTAL	**1,635,831.38**	**2,336,082.01**	**1,882,641.03**	**1,773,585.61**	**1,417,720.53**
PERCENT	40.78%	41.14%	40.93%	40.90%	40.92%
TOTAL TURNOVER	**4,011,129.29**	**5,678,598.31**	**4,599,793.85**	**4,336,810.02**	**3,464,440.67**

FIGURE 10: TOTAL TURNOVER COSTS BY YEAR

	Separation	Hiring	Training	Performance Differential	Total
SY2008	79,322.43	299,290.52	1,668,107.20	1,417,720.53	**3,464,440.67**
SY2007	101,985.98	374,416.07	2,086,822.36	1,773,585.61	**4,336,810.02**
SY2006	104,576.10	397,438.42	2,215,138.30	1,882,641.03	**4,599,793.85**
SY2005	100,690.92	493,162.92	2,748,662.47	2,336,082.01	**5,678,598.31**
SY2004	105,223.63	345,335.21	1,924,739.07	1,635,831.38	**4,011,129.29**
SY 2003	103,604.80	273,844.77	1,526,284.32	1,297,185.59	**3,200.919.47**
SY 2002	84,826.43	390,168.21	2,174,617.48	1,848,202.48	**4,497,814.59**
SY 2001	78,674.90	300,502.22	1,674,860.67	1,423,460.29	**3,477,498.07**
SY 2000	83,855.14	319,889.46	1,782,916.19	1,515,296.44	**3,701,957.23**
SY 1999	73,494.66	325,947.97	1,816,683.55	1,543,995.24	**3,760,121.41**

■ Separation   ■ Hiring   ■ Training   ■ Performance Differential

It is important to note that separation and hiring costs are generally considered *hard* costs and training costs and performance productivity are generally considered *soft* costs. Soft costs were substantially higher in this study (see Figure 10) but the school district probably does not realize their impact because they are not readily apparent. In addition, the literature does not seem to adequately address this issue.

Question #2:

To what extent have these costs changed over this period?

Figure 10 displays a graphical representation of the total teacher turnover costs by category for SY 1999 through SY 2008. The total costs peaked at $5.7 million in SY 2005 but generally averaged approximately $4.1 million. In SY 2008, during a national recession that continues into SY 2009, the costs decreased to $3.4 million. This may be attributed to the fact that teachers were concerned about the news of the recession and were unwilling to explore other teaching possibilities. This may be consistent with the SY 2003 costs of $3.2 million, which was also a year of state financial crisis.

Table 18 displays the turnover rates by year, including the rates of change between years, as compared to the national average. The turnover rate was calculated by dividing the exiting teachers by the total number of teachers. The rate of change from year to year was calculated by subtracting the previous year's rate from the current year's rate and then dividing by the previous year's rate. Changes in the district teacher workforce could be attributed to the changes in superintendent leadership four times during the years being studied and the state budgetary crises in 2002 and 2008. Based on an analysis of these data, the turnover rates for TPS recorded a lower rate of teacher turnover than the national average for the years being studied.

TABLE 18: TURNOVER RATES COMPARED TO NATIONAL AVERAGE

	TOTAL TEACHERS	EXITING TEACHERS	ADDED TEACHERS	TURNOVER RATE	RATE OF CHANGE	NATIONAL AVERAGE
SY 1999	3,005	227	269	7.55%		15.2%
SY 2000	3,010	259	264	8.60%	12.21%	15.1%
SY 2001	3,015	243	248	8.06%	-6.76%	NA
SY 2002	3,075	262	322	8.52%	5.38%	15.7%
SY 2003	2,981	320	226	10.73%	20.65%	16.9%
SY 2004	2,941	325	285	11.05%	2.86%	16.5%
SY 2005	3,037	311	407	10.24%	-7.91%	NA
SY 2006	3,042	323	328	10.62%	3.56%	NA
SY 2007	3,036	315	309	10.38%	-2.34%	16.8%
SY 2008	3,038	245	247	8.06%	-28.66%	NA

FIGURE 11: TREND ANALYSIS FOR TURNOVER RATES IN SY 2010-2012
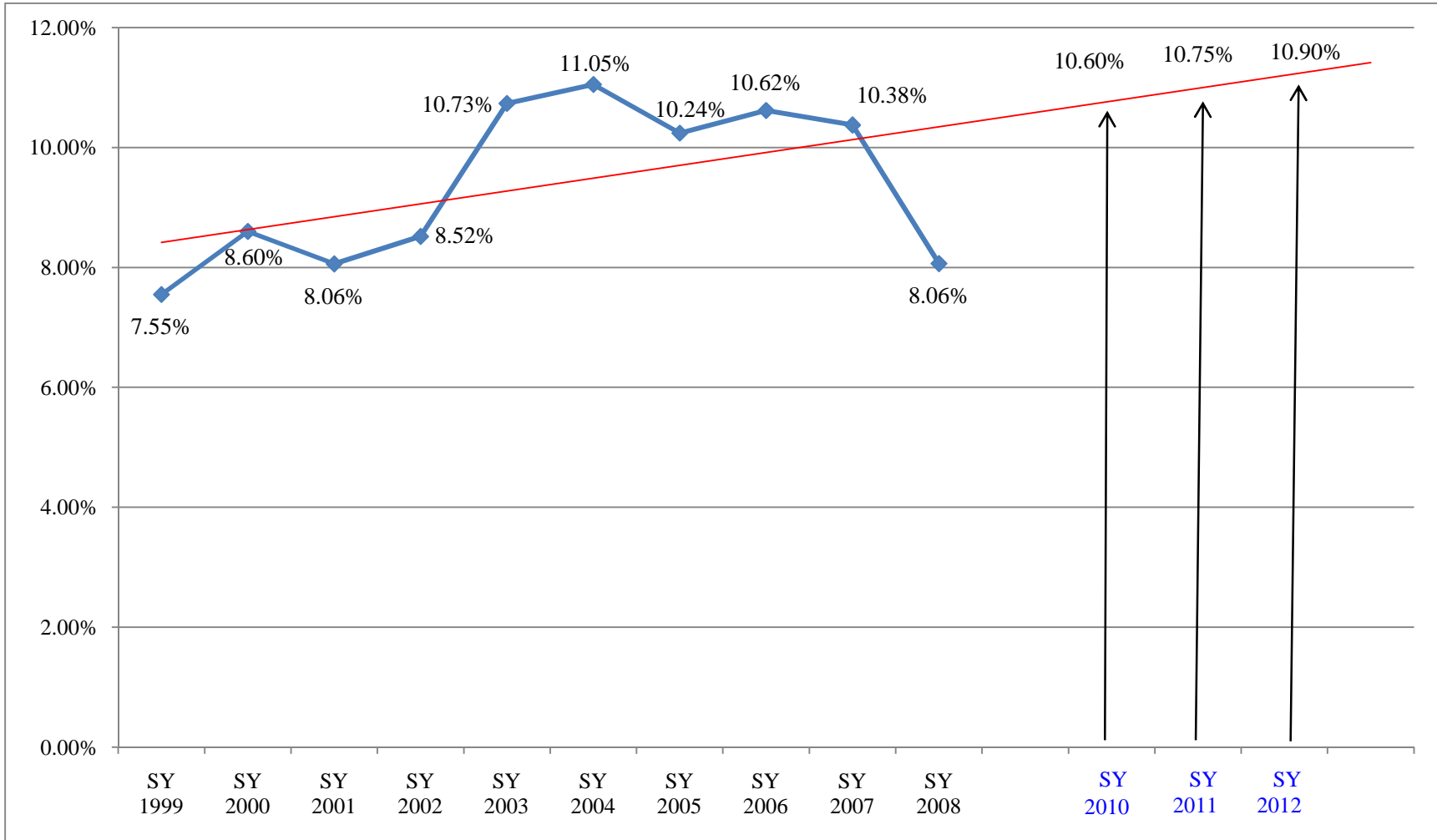
FIGURE 12: TREND ANALYSIS FOR TURNOVER COSTS IN SY 2010-2012
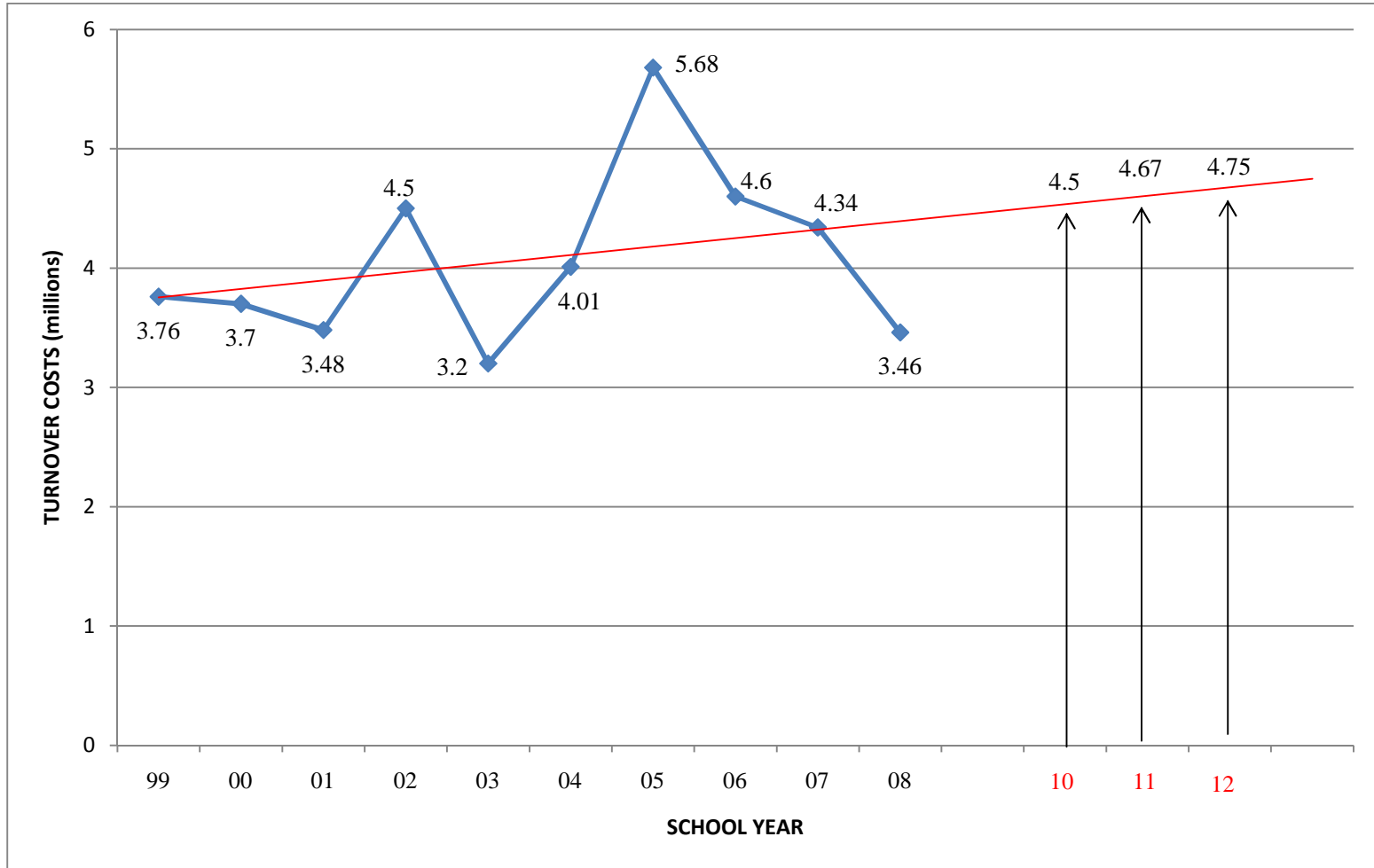
What are the predicted teacher turnover costs in SY 2010 through SY 2012?

Figure 11 displays the trend analysis turnover rate projections for SY 2010 through SY 2012. The estimations are 10.60 percent, 10.75 percent, and 10.90 percent respectively. Microsoft Excel was used to calculate the trend analysis in a linear format. Figure 12 displays the trend analysis turnover costs projections for SY 2010 through SY 2012. The estimations are $4.50 million for 2010, $4.67 million for 2010, and $4.75 million for 2012. Although there have been some outliers – turnover rate in SY 2004 and turnover costs in SY 2005 – the numbers have remained consistent over the period being studied. It is too early to determine whether the lower numbers in 2008 will remain consistent with the next several years or whether it is an anomaly due to the recent state and national budgetary crises.

Summary

The purpose of this study was to validate a 4-component turnover model by calculating the financial costs of teacher turnover in an urban school district. The three research questions and their corresponding results provided a detailed analysis of teacher turnover in this urban school district. The *Model* was then tested to investigate how well it performed when calculating turnover. Finally, this chapter provided an understanding how these costs contributed to the financial costs of teacher turnover.

This chapter included an introduction, a description of the teacher workforce, and a description of the movement of this workforce. The exploration of differences in teacher turnover were discussed by demographics and teaching categories. Chapter Four presented discussions and analysis of the findings obtained from the study. The final chapter of this study

discusses the implications of the results of the statistical analyses, and presents conclusions for

future consideration based on these implications.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Turnover of public school teachers has been an issue of continuing concern in education for the past 80 years. Understanding the implication of teacher turnover is critical in order to identify how to retain teachers. Knowing that 50 percent of new teachers leave the profession within five years (Ingersoll, 2002c; Murnane, Singer, Willett, Kemple, & Olsen, 1991; Schlechty & Vance, 1981), and knowing that the teacher turnover problem is not just focused in the area of new teachers, school districts can face many problems.

The annual recruitment and placement of teachers is not only time-consuming and labor intensive, it is a costly burden on public school administrators (Boe, Bobbitt, Cook, Whitener, & Weber, 1997). Furthermore, teachers hired to replace the teachers who have left often do not have the teaching experience and qualifications of the teachers they are replacing (Rollefson, 1993), and the induction of replacement teachers disrupts instructional programs until the new teachers are assimilated to the culture, curriculum, and school community (Boe, Bobbitt, & Cook, 1997).

Schools play a critical role in helping to shape our society, and the quality of our children's education depends greatly on the quality of its teachers (Gardner, 2006). It is important to study turnover patterns and their implications to determine viable solutions that will reduce the present turnover rate of teachers and, in turn, help maintain or improve the quality of public schools. As pointed out by Lortie (1975), the hierarchical structures of schools are often not conducive to generating a feeling of collegial cooperation between teachers and

administrators, and their negative effects on retention are corroborated by findings by Ingersoll (2002c). Teachers are so often under fire when it comes to accountability for student test scores and the requirements of the *No Child Left Behind Act* that educators would rather change professions than work under the stressful conditions of public schools teachers (Gonzalez, 2005).

The conceptual framework utilized for this study was based on the human capital theory (Becker, 1964), which dictates career choices and frequently plays a part in teachers' decisions about entering or staying in education (Kirby & Grissmer, 1993; MacDonald, 1999). Prospective teachers weigh the costs and benefits of entering a profession associated with inadequate salary (Makovec, 2008). Shen (1997) described teacher turnover as being similar to a U-shaped curve (Figure 8) over a life cycle: novice teachers leave at a higher rate than do middle-career teachers, and turnover rate of veteran teachers rises as they approach retirement age.

This chapter presents the implications of the findings, including interpretation of the data and inferences that may be drawn; the conclusions of the study as it relates to the literature; and recommendations for practice and future research. The chapter concludes with a discussion of future considerations. Efforts to recruit and retain teachers have been at the forefront of the nation's educational agenda. School districts face constraints in combating teacher shortages including teacher certification regulations, the reluctance of teachers to work in rural and urban schools, and the enticement of incentives in the other sectors of the economy (Ingersoll, 1999; Hanushek, Kain, & Rivkin, 1999; Stoddart, 1993).

As previous studies have indicated (Harrell, Leavell, & vanTassel, 1999; Luekens, Lyter, & Fox, 1999), student behavior problems can push practitioners out of the profession. Teachers with minimal content knowledge often lack the self-efficacy and competency to remain in teaching indefinitely. Previous studies have confirmed that under-prepared teachers are more

likely to leave teaching (Darling-Hammond, 2008). This exodus of teachers results in the costs associated with recruitment and retention efforts straining many school budget allocations (Alliance for Excellent Education, 2005; Benner, 2000).

Summary of Study

The purpose of this study was to validate a 4-component turnover model by calculating the financial costs of teacher turnover in an urban school district. This study focused on teacher turnover in terms of separation costs, hiring costs, training costs, and performance productivity costs at one urban public school district for school year (SY) 1999 through SY 2008. In addition to the potential implications for practice at other schools facing similar issues, the primary intention of this study was to test the **Tulsa Turnover Model** (Appendix A) as an accurate measurement of the aforementioned costs related to teacher turnover.

Three research questions were analyzed to test the *Model*.

1. Research Question 1: What are the financial costs associated with teacher turnover in an urban school district in a mid-sized Southern city between SY 1999 and SY 2008?

2. Research Question 2: To what extent have these costs changed over this period?

3. Research Question 3: What are the predicted teacher turnover costs in SY 2010 through SY 2012?

This study's focus was to develop a model to quantify the costs that comprise teacher turnover and then test the model in a mid-sized urban school district. Previous studies have used business estimations and educational estimates while others have tried to apply real costs to the equation. The goal of this study was to assimilate all the available information and develop one encompassing model.

Findings

Comparison with Previous Studies

The findings of this study aligned with several components of the literature. Billingsley (1993) argued that grade level was related to teacher turnover. This was validated in this study by the fact that elementary teachers accounted for 26.35 percent, which is nearly twice the rate of either middle school teachers at 15.62 percent or high school teachers at 14.73 percent (see Table 14).

Comparison of the TPS results with the Texas study (Benner, 2000) of three diverse school districts (Table 6) in four categories showed the following results:

- *Advertising*: TPS cost of $103.97 was 14.1% higher than the highest amount of $91.12 in District "A".

- *Professing Applications*: TPS costs of $24.32 were between the costs of District "B" ($9.74) and the costs of District "C" ($47.75).

- *Background Checks*: TPS costs of $54.28 were similar to the costs of the median costs of the three districts (District "C" at $56.33).

- *Interviews*: TPS cost of $209.41 was 68.3% higher than the highest amount of $124.44 in District "C".

Ingersoll (2003b), NCTAF (2003), and Colbert and Wolff (1992) contend that up to 50 percent of teachers leave by the fifth year. This also was validated by this study: 11.73 percent left after the first year, 10.25 percent left after the second year, 8.41 percent left after the third year, 6.75 percent left after the fourth year, and 6.61 percent left after the fifth year, for a total of 43.75 percent (see Table 16). However, when compared to the ACORN (2003) study, these percentages are substantially smaller. This may be attributed to comparing the third largest city

in the country in a Midwest mid-sized city. It has previously been established that comparing

diverse regions of the country may be like comparing apples to oranges.

Initially novice educators may have high ideals and well-defined goals, but after a year or

two of facing the realities of being a teacher they can become discontented. Problems with

discipline, non-motivated students, distant administrators, and day-to-day tasks that have very

little to do with teaching students, may cause these teachers to become dissatisfied with their

chosen career (Watson, 2000).

Tulsa Turnover Model

The intent of this study was to build and test an empirical model of teacher turnover.

Validating this ***Model*** both contributed to the development of an explanation of what costs are

included in the discussion of teacher turnover and presented a hard versus soft costs debate

(Benner, 2000; Milanowski & Odden, 2007). This study consisted of examining the terminated

teacher database at Tulsa Public Schools (TPS) between SY 1999 and SY 2008. In addition, the

data integrity was verified through conversations with personnel in Human Capital, Payroll,

Benefits, Professional Development and Information Systems departments who perform tasks

related to teacher employment.

The discrepancy between *hard* costs and *soft* costs in the calculation of the financial costs

of teacher turnover in an urban school district and the lack of literature on this subject may

provide an avenue for the impact of the categorization of teacher turnover costs to become an

integral part of the educational policy agenda at both the state and national levels.

Research Questions

The descriptive statistics yielded the following results. Males represented 19.58 percent

of the teacher workforce but 20.46 percent of the teachers that left, resulting in an increase of

4.49 percent. Minority teachers represented 22.09 percent of the certified staff, but only 16.81 percent of those teachers who left, a decrease of 23.9 percent.

Research question one was answered by populating the *Model* and calculating the yearly turnover costs. These costs ranged from $3,200,900 in SY 2003 to $5,678,600 in SY 2005. Research question two was answered by graphically representing these costs in order to determine trend analysis. In addition, the yearly turnover rates were calculated. The rates ranged from 7.55 percent in SY 1999 to 11.05 percent in SY 2004. Finally, research question three was answered using trend analysis to predict SY 2010 through 2012. The projected costs ranged from $4.5 million to $4.67 million to $4.75 million and the projected rates ranged from 10.60 percent to 10.75 percent to 10.90 percent. The rising turnover costs and rates were indicative of the fact that the problem of teacher turnover is still a financial strain on this school district. However, the results were below the national average.

Conclusions

Hard versus Soft Costs

As previously mentioned, the training costs averaged 48.15 percent of the total turnover costs and performance productivity averaged 40.92 percent of the total costs. These *soft* costs are often overlooked because they are often highly variable, based on intangibles, or things that are very difficult to quantify. For example, lost productivity due to an unprepared or untrained teacher is a *soft* cost. Some school districts can accept soft costs, but many others do not. Does a school district really lose money if a teacher is not productive on the first day, during the first week, or by the first month? It probably depends on a case-by-case measurement of teacher productivity. For better or worse, people time may not be valued with a specific dollar amount.

Hard costs – such as advertising costs – are specific and identifiable costs to teacher employment. The costs do not vary from teacher to teacher. Most school districts are still more interested in *hard* cost savings and find it far easier to justify a decision on the basis of hard savings. The real issue in a study of this kind is whether a school district knows how much of teacher turnover expenditures are *hard* costs and how much are *soft* costs. Does the district the components that contribute to this cost, and how much each one of them costs? These are critical pieces of information as districts seek to improve their teacher retention process – especially in these tough economic times.

Patterns

Overall, five patterns emerged from the data analysis.

1. **The Tulsa Public Schools' teacher turnover rate was below the national average.** This may be attributed to the district's investment in their comprehensive induction program, which includes orientation and mentoring, the lower cost of living in Oklahoma, or the lower teacher salaries.

2. **Elementary teachers left at a faster rate than secondary teachers**, which is contrary to the national trend. This may be characterized as *culture shock*. Novice teachers may not have completed an internship in urban, high poverty schools and therefore may not be prepared for the myriad of social and emotional problems that lower socioeconomic students may bring to the classroom.

3. **Regular education teachers left at higher rates than special education teachers**. This may be the results of the extensive network of supportive teachers that the district has established and the monthly meetings designed to exchange information.

4. **Teachers with less than five years of experience accounted for nearly 50 percent of the departures**, which matched the national trend.

Lower turnover and the departure of novice teachers were expected results of this study. However, the elementary teacher and regular education in general exits must be considered abnormal based on exiting research.

These patterns established a strong confirmation to the literature review (Hull, 1999; NCES, 1998, 2000, 2003; NCTAF, 2003, 2007b; Alliance for Excellent Education, 2008a; Benner, 2000; Breaux & Wong, 2003; Ingersoll, 2000, 2001a, 2002a; Butterfi, 2005; Williams, 2005; Birkeland & Curtis, 2006; Reichardt, 2006; Barnes, Crowe, & Schaefer, 2007; Milanowski & Odden, 2007; Hauenstein, 1999; Gately, 1990; Ettorre, 1997; Brannick, 1999; Carroll & Fulton, 2004; Adams & Dial, 1994; Murnane, Singer, Willett, Kemple & Olsen, 1991; Billingsley, 2003; Brownell, Sindelar, Biship, Langley & Seo, 2002; Fore, Martin & Bender, 2002; Spiedel, 2005; Planty, Hussar, Snyder, Kena, Dinkes, KewalRamani & Kemp, 2008; Colbert & Wolff, 1992); Henke, Chen & Geis, 2000; Keller, 2003; Ingersoll & Smith, 2003).

This study examined one urban school district in a mid-sized city in the Southern United States. Oklahoma ranked 24th in the number of terminated teachers – preceded by South Carolina, Colorado, Alabama, and Washington and followed by Indiana, Kentucky, Wisconsin, and Kansas (Alliance for Excellent Education, 2005). There were similarities with previous studies. First, half of the novice teachers (with less than five years of experience) left their placement (NCTAF, 2003; Ingersoll, 2003b). Second, the higher percentage of minority students contributing to the loss of teachers (King-Rice, 2003). Third, the teacher turnover by years of experience (Figure 10) matched the U-shaped configuration (Shen, 1997, Tye & O'Brien, 2002;

Grissmer & Kirby, 1991). Fourth, TPS matched the turnover costs of Broward County ($14,509 versus $12,652), with both having strong induction and mentoring programs.

There were also some differences that need to be considered when comparing results with previous studies. First, it is impossible to compare per-leaver turnover costs across regions of the country without also considering the varying economic conditions. Second, increasing teacher salaries have sometimes had positive results. Wisconsin raised its teacher salaries 26.5% from 2006 to 2008 which reduced the turnover rate to the lowest in the nation (7.66%). Oklahoma raised its salaries 12.3% over the same time period but the turnover rate was in the median range at 13.11%. The two most important results validated in this study was that half of the novice teachers entering teaching left their initial placement five years later and elementary teachers leave the fastest.

Threats to External Validity

Three areas of concern were encountered in the course of this study.

- First, the lack of data in secondary subject areas hindered the researcher's ability to draw conclusions about the possible deficits in the hard-to-fill areas of mathematics, science and special education. Therefore, departure rates across teaching assignment areas were impossible to calculate.

- Second, even though research approval was obtained from the TPS Project Management Office (see Appendix C), management personnel in the Human Capital department restricted access to one of the district staff that handled secondary teacher employee tasks that would have provided a more well-rounded picture of teacher employment in the district.

- Finally, the researcher received a snapshot of the database in two parts, one with SY 1999 through SY 2008 data, which did not contain demographic information, and another with SY

2003 through SY 2008 data, which did contain the information. Therefore, demographic analyses in these categories were limited to six years instead of ten years.

Limitations of the Study

Although the researcher is confident in the soundness of the methodology used, this study did have limitations. The data reported were based on one urban school district in a mid-sized Southern city. It would make an interesting comparison to replicate this study with teachers representing different geographical and socioeconomic populations. The terminated teacher database provided a wealth of information about preK-12 teachers in Tulsa Public Schools, but it would be practically impossible in a single study to investigate all possible interactions with the information provided.

These findings must be interpreted with caution because the study did not track teachers who transferred to other schools within the district or districts within the metropolitan area of Tulsa. Further, it was beyond the capacity of the investigator's resources to determine the number of teachers that left the profession altogether. Finally, there was no information provided to determine whether some teachers may have left the district and returned in subsequent years.

Recommendations

The results of this study point to a few areas worthy of further study regarding teacher turnover. Recommendations are a combination of thoughtful analyses and syntheses based on the review of literature, quantitative results, and qualitative data. As the literature clearly supports, further research should be conducted to strengthen the process of retaining certified teachers.

Recommendations for Practice

Improving students' academic achievement is one of the main goals of education. For this reason, it is important that resources are optimized to realize this goal. By developing a strategic plan to retain and support teachers, the district can reap the benefits of reduced teacher turnover. With the additional funds available, the following recommendations are worthy of consideration:

Demographics: The district teacher population is dominated by Caucasian teachers (78.4%) with African American teachers (14.1%) being the next largest demographic group. However, the student population consists equally of Caucasian (35.9%) and African American (36.0%) students. This results in a teacher/student demographic mismatch which the literature suggests is an important factor in teacher turnover (Futrell, 1999; King, 1993; King-Rice, 2003; Boyd, Lankford, Loeb & Wyckoff, 2005). This should be an important consideration in future recruitment efforts for administrators.

Grade Level: Elementary teachers (26.35%) leave at a rate similar to the total of both middle school teachers (15.62%) and high school teachers (14.73%). This is contrary to the national trend (Ondrich, Pas & Yinger, 2005; Adams & Dial, 1994; Murnane, Singer, Willett, Kemple & Olsen, 1991; Cashwell, 2008). Tulsa Public Schools should consider exploring the reasons related to this discrepancy. School administrators should also collaborate with university teacher education programs to encourage teacher internships in urban, high poverty schools.

Supportive Network: Since the early 1990s, educational researchers have documented the crisis in recruiting and retaining special education teachers (Ax, Conderman & Stephens, 2001; Billingsley, 2003; Brownell, Smith, McNellis & Miller, 1997). Tulsa Public Schools has less of a problem retaining this subclass of teachers than their regular education teachers. The total terminated special education teachers (13.11%) is less than total of either elementary,

middle, or high school regular education teachers. The district should examine the retention efforts for these highly sought-after educators. Administrators need to take the lessons learned here and expand them to all departments in their schools. Their proactive advocacy of the mission and goals of their schools may help teachers feel like a valued cog on the wheel of change. Two-way communication addresses problems head-on and establishes win-win scenarios.

Recommendations for Future Research

The review of the literature and the findings of this research study generated information that has culminated into practical recommendations for future lines of research. The recommendations for future research may provide further insights and contribute to the body of knowledge concerning how to combat the ever increasing dilemma of teacher turnover – especially in urban school districts. These recommendations may include:

Mirror Study: The first recommendation for future research is to conduct this same study at a similar urban school district in another geographical area of the United States with a similar demographical population to determine whether the financial costs calculated in this study are consistent with that study.

Leadership Style: According to Galley (1999), schools where teacher retention was high revealed that the principals were visionary leaders, teacher-focused, stressed the value of leadership, and were committed and passionate about their jobs. Future research should address the administrators' leadership style – transformational versus transactional – as it relates to teacher turnover.

Induction and Mentoring: These results also indicated the importance of teacher orientation mentoring programs spanning several years, not just among the early career teachers,

but also among the late career teachers. Future research should test the effectiveness of such programs, as it relates to job satisfaction and teacher retention.

Final Conclusions

What are the reasons that our public school teachers are leaving the profession before retirement? The National Education Association (2003) reports that teachers feel overwhelmed by the scope of the job, feel unsupported and isolated, and are often unclear on the expectations of the job. The National Center for Education Statistics examined the need for new teachers and found that the United States employs over 150,000 teachers to meet the demands of growing school districts, retiring teachers, and replacing those educators who have left the profession (NCES, 2000).

The financial costs of teacher turnover presented in this study should be unacceptable to any school district watching their financial bottom line and providing the best teaching workforce for their students. A decade of discussing the problem in political and educational circles has arguably not yielded much change in educational policy – teachers are still leaving in record numbers and the turnover costs are skyrocketing out of control.

Research has shown that teacher retention efforts are particularly needed at schools in inner-city and high poverty areas, as these are the schools that experience higher rates of turnover (Darling-Hammond, 2003). "High-poverty public schools, especially those in urban communities, lose, on average, over one-fifth of their faculty each year" (Ingersoll, 2005, p. 3). While some turnover is acceptable, and perhaps can even be considered beneficial if it fosters the infusion of new ideas, too much turnover can be costly.

Teacher turnover rates have been a major dilemma impacting the nation's school systems for decades. Table 19 displays the national turnover rates based on the National Center for

Education Statistics reports for years in which national data is available since 1987 (NCES, 1998; NCES, 2000; NCES, 2003) and the 2007 NCTAF national study (NCTAF, 2007b).

If Marzano's (2003) contention that the number one factor impacting student achievement is the classroom teacher is truly the case, political leaders must work collaboratively with educational leaders to improve the nation's educational system and attract and retain highly qualified teachers by utilizing research presented here.

TABLE 19: NATIONAL TEACHER TURNOVER RATES
Source: NCES (1998, 2000, 2003) & NCTAF (2007b)

YEAR	RATE	YEAR	RATE
1987	14.5%	**1999**	15.2%
1988	13.5%	**2000**	15.1%
1990	13.2%	**2002**	15.7%
1991	12.4%	**2003**	16.9%
1993	14.2%	**2004**	16.5%
1994	13.8%	**2007**	16.8%

With the pressures facing schools due to the governmental dictates of *No Child Left Behind Act*, the issue of finding and keeping quality teachers in the classroom is an issue that is going to require innovative thoughts and solutions. The competition for teachers, particularly those in high need areas such as special education, mathematics, and science is going to continue to cause school administrators challenges. If quality teachers are not remaining in the profession, the students, ultimately, are the ones who suffer.

The teaching profession is a demanding profession, and the increased pressures of laws, bureaucracy, lack of respect, increased at-risk student populations and decreased parental involvement causes teachers to become frustrated, and in some cases, leave the profession. Particularly at the middle school level, attention needs to be placed on how to support teachers and provide the motivation to stay. Based on the literature and the results of this study, school

districts must begin to place greater emphasis on teacher turnover over teacher recruitment, although both efforts present expensive options. Teacher turnover continues to pose a financial challenge for school districts year after year. Progressive educational leaders, cognizant of the value of human resources, must weigh the price of current recruitment and retention initiatives and compare these expenditures to the cost of losing quality teachers. For school districts, the costs incurred by separation and replacement may be determined by mathematical formula, but the cost to students may be incalculable.

References

Abdel-wahab, Y. (n.d.) Ex post facto method of research. Retrieved October 1, 2009, from http://www.kau.edu.sa/Files/320/Researches/46438_18.pdf.

Adams, G. J. (1996, Spring). Using a Cox regression model to examine voluntary teacher turnover. *Journal of Experimental Education, 64(3)*, 267-285.

Adams, G. J., & Dial, M. (1993). Teacher survival: A Cox regression model. *Education and Urban Society, 26(1)*, 90-99.

Adams, G. J., & Dial, M. (1994). The effects of education of teacher retention. *Education, 114(3)*, 358-363.

Afolabi, C. Y., Nweke, W. C., & Eads, G. M., & Stephens, C. E. (2007). The cost of teacher attrition and savings from reducing teacher attrition. Atlanta, GA: Educator Workforce Recruitment.

Al Kaabi, A. S. (2005). Factors influencing teacher attrition in the United Arab Emirates. *Dissertation Abstracts International, 66(09)*, 3159. (UMI No. AAT 3192927). Retrieved June 6, 2009, from Dissertations and Theses database.

Alexander, S. K., Rush, G., & Figg, M. (1966). Teacher turnover study. Kentucky Department of Education, Division of Statistical Services.

Allen, M. (2002). Improving teacher preparation, recruitment, and retention. *Spectrum: The Journal of State Government, 75(3)*, 8-11.

Alliance for Excellent Education. (2002). *New teacher excellence: Retaining our best*. Washington, DC: Author.

Alliance for Excellent Education. (1999, June 23). Tapping the potential: Retaining and developing high-quality new teachers. Retrieved June 6, 2009 from http://www.all4ed.org/files/TappingThePotential.pdf.

Alliance for Excellent Education. (2005, August). *Teacher attrition: A costly loss to the nation and to the states*. (Issue Brief). Washington, DC: Author.

Alliance for Excellent Education. (2008a, February). What keeps good teachers in the classroom? Understanding and reducing teacher turnover. Washington, DC: Author.

Alliance for Excellent Education. (2008b, June). Possible economic impacts of improved education in Oklahoma. Retrieved January 31, 2009 from http://www.all4ed.org/files/Oklahoma_econ.pdf.

Alliance for Excellent Education. (2008c, February). Oklahoma high school report card. Retrieved January 31, 2009 from http://www.all4ed.org/files/Oklahoma.pdf.

Alliance for Excellent Education. (2008d, February). Oklahoma's ten largest school districts. Retrieved January 31, 2009 from http://www.all4ed.org/about_the_crisis/ state_and_local_info/Oklahoma/10_largest_districts.

Alliance for Excellent Education. (2008e, February). Finding and keeping the teachers we need. Retrieved June 6, 2009 from http://www.all4ed.org/files/TeacherQualityFactSheet.pdf.

Alliance for Excellent Education. (2008f, February). The costs of teacher turnover: Are we really losing the best teachers? [Briefing]. Retrieved January 31, 2009 from http://www.all4ed.org/ events/costs-teacherturnover.

Archer, J. (1999). New teachers abandon field at high rate. *Education Week, 18(27)*, 1-5.

Associated Press. (2008, April 1). *High school graduation rates plummet below 50 percent in some U. S. cities*. Retrieved September 21, 2009, from http://www.foxnews.com/story/ 0,2933,344190,00.html

Association of Community Organizations for Reform (ACORN). (2003). Where have all of the teachers gone? The costs of teacher turnover in ACORN neighborhood schools in Chicago. Retrieved January 6, 2009 from http://www.acorn.org/index.php?id=315.

Association for Supervision and Curriculum Development (ASCD). (April 15, 2003). *Cost of teacher turnover: Research brief*. Retrieved December 13, 2008 from http://www.ascd.org/ publications/researchbrief/volume1/v1n8.html.

Ax, M., Conderman, G., & Stephens, J. T. (2001). Principal support essential for retaining special educators. *NASSP Bulletin, 85(621)*, 66-71.

Baker, D. P., & Smith, T. (1997). Teacher turnover and teacher quality: Refocusing the issue. *Teachers College Record, 99(1)*, 29-35.

Balfanz, R., & Legters, N. (2001). *How many central city high schools have a severe dropout problem, where are they located, and who attends them? Initial estimates using the common core of data*. Cambridge, MA: Civil Rights Project at Harvard University.

Balfanz, R. (2007, August 16). Locating and transforming the low performing high schools which produce the nation's dropouts. Paper presented at Turning Around Low-Performing High Schools: Lessons for Federal Policy from Research and Practice, Washington, DC.

Ballou, D., & Podgursky, M. (1998). Teacher recruitment and retention in public and private schools. *Journal of Policy Analysis and Management, 17(3)*, 393-417.

Barnes, G., Crowe, E., & Schaefer, B. (2007). *Cost of teacher turnover in five school districts: A pilot study*. Washington, DC: National Commission of Teaching and America's Future. ERIC (ED497176).

Barro, R. J., & Sala-I-Martin, X. (1992). Public finance in models of economic growth. *Review of Economic Studies, 59*, 645-661.

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. Chicago: University of Chicago Press.

Becker, G. S. (1992, December 9). *The economic way of looking at life*. Paper presented at Nobel Lecture, Stockholm, Sweden.

Benner, A. D. (2000). *The cost of teacher turnover*. Austin, TX: Texas Center for Educational Research.

Berry, B. (1985, April). *Why Miss Dove left and where she went: A case study of teacher attrition in a metropolitan school system in the southeast.* Occasional paper in Educational Policy Analysis, Paper No. 414. Washington, DC: National Institute of Education.

Berry, B., & Hirsch, E. (2005, October 27). *Recruiting and retaining high-quality teachers for hard-to-staff schools* (Issue Brief). Washington, DC: NGA Center for Best Practices.

Berry, B., Hopkins-Thompson, P., & Hoke, M. (2002). Assessing and supporting new teachers: Lessons from the southeast. Chapel Hill, NC: Southeast Center for Teaching Quality.

Billingsley, B. (1993). Teacher retention and attrition in special and general education: A critical review of the literature. *Journal of Special Education, 27(2)*, 137-174.

Billingsley, B. S. (2003). Special education teacher retention and attrition: A critical analysis of the research literature. *Journal of Special Education, 38(1)*, 39-55.

Billingsley, B. S., & Cross, L. H. (1992). Predictors of commitment, job satisfaction, and intent to stay in teaching: A comparison of general and special educators. *Journal of Special Education, 25(4)*, 453-471.

Birkeland, S.E. & Curtis, R. (2006). *Ensuring the support and development of new teachers in the Boston Public Schools: A proposal to improve teacher quality and retention*. Boston, MA: Boston Public Schools.

Blank, R. K., & Toye, C. (2007, September). *50-state analysis of the preparation of teachers and the conditions for teaching: Results from the NCES Schools and Staffing Survey*. Washington, DC: Council of Chief State School Officers.

Blazer, C. (2006). Literature review on teacher transfer and turnover. Miami-Dade County Schools. Retrieved June 20, 2009 from http://drs.dadeschools.net/Reports/ Teacher_Turnover.pdf.

Bliss, W. (2001). The business cost and impact of employee turnover. Retrieved January 3, 2009 from http://www.isquare.com/ turnover.cfm.

Bliss, W. G. (n.d.) *Cost of employee turnover*. The Advisor. Retrieved November 8, 2008 from http://www.blissassociates.com/ html/articles/employee_turnover01.html.

Bluedorn, A. C. (1982). A unified model of turnover from organizations. *Human Relations, 35(2)*, 135-153.

Boardman, A., Darling-Hammond, L., & Mullins, S. (1982). A framework for analysis of teachers' demand and supply. *Economics of Education Review, 2(2)*, 127-155.

Boe, E., Barkanic, B., & Leow, C. (1999). *Retention and attrition of teachers at the school level: National trends and predictors*. (ERIC Document Reproduction Service No. ED 426 991).

Boe, E. E., Bobbitt, S. A., & Cook, L. H. (1997). Whither didst thou go? Retention, reassignment, migration, and attrition of special and general education teachers from a national perspective. *Journal of Special Education, 30(4)*, 371-389.

Boe, E., Bobbitt, S., Cook, L., Barkanic, G., & Maislin, G. (1998). *Teacher turnover in eight cognate areas: National trends and predictors*. Washington, DC: Department of Education. (ERIC Document Reproduction Service No. ED 426 991).

Boe, E. E., Bobbitt, S. A., Cook, L. H., Whitener, S. D., & Weber, A. L. (1997). Why didst thou go? Predictors of retention, transfer, and attrition of special and general education teachers from a national perspective. *The Journal of Special Education, 30(4)*, 390-411.

Boe, E. E., Cook, L. H., & Sunderland, R. J. (2008). Teacher turnover: Examining exit attrition, teaching area transfer, and school migration. *Exceptional Children, 75(1)*, 7-31.

Bogler, R. (2001). The influence of leadership style on teacher job satisfaction. *Educational Administration Quarterly, 37(5)*, 662-683.

Borman, G. D., & Dowling, N. M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research, 78(3)*, 367-409.

Boyd, D. J., Grossman, P. L., Ing, M., Lankford, H., Loeb, S., & Wyckoff, J. H. (2009, May). The influence of school administrators on teacher retention decisions. New York: Center for Analysis of Longitudinal Data in education Research.

Boyd, D. J., Grossman, P., Lankord, H., Loeb, S., Michelli, N. M., & Wyckoff, J. (2006). Complex by design: Investigating pathways into teaching in New York City schools. *Journal of Teacher Education, 57(2)*, 155-166.

Boyd, D. J., Grossman, P., Lankord, H., Loeb, S., & Wyckoff, J. (2009, March). Who leaves? Teacher attrition and student achievement. New York: Center for Analysis of Longitudinal Data in Education Research.

Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). Explaining the short careers of high achieving teachers in schools with low performing students. *American Economic Review, 95(2)*, 166-171.

Bradshaw, L. K. (1998, April 16). Policy, politics, and contradictions of alternative teacher certification. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Brandon, P. R. (2000, October). K-12 general-education teachers' voluntary resignations from the Hawai'i Department of Education: Demographics, reasons for leaving, dissatisfactions, and suggestions for improvement. Honolulu, HI: The Hawai'i Educational Policy Center.

Brannick, J. (1999). Decreasing the staggering costs of turnover in your organization. Retrieved January 3, 2009 from http://www.brannickhr.com/Article-Retention.htm.

Breaux, A., & Wong, H. (2003). *New teacher induction: How to train, support, and retain new teachers*. Mountain View, CA: Harry Wong Publishing.

Brendle-Corum, A., & Haynes, J. P. (1999). Four ways to support new teachers. *Principal, 84(1)*, 61.

Brewer, D. J. (1996). Career paths and quit decisions: Evidence from teaching. *Journal of Labor Economics, 14(2)*, 313-339.

Broughman, S. P., & Rollefson, M. R. (2000, September). *Teacher supply in the United States: Sources of newly hired teachers in public and private schools, 1987-88 to 1993-94* (NCES 2000-309). Washington, DC: National Center for Education Statistics.

Brown, K. L. (2002). Acclimating induction teachers to low-performing schools: Administrator's role. *Education, 123(2)*, 422-426.

Brown, N. (2000). New teachers and their colleagues: How beginning high school teachers experience the professional cultures of their schools: Special Qualifying Paper. Cambridge, MA: Harvard University School of Education.

Brownell, M. T., Sindelar, P. T., Biship, A. G., Langley, L. K., & Seo, S. (2002). Special education teacher supply and teacher quality: The problems, the solutions. *Focus on Exceptional Children, 35(2)*, 1-16.

Brownell, M. T., Smith, S. W., McNellis, J. R., & Miller, M. D. (1997). Attrition in special education: Why teachers leave the classroom and where they go. *Exceptionality, 7(3)*, 143-155.

Brunetti, G. J. (2001). Why do they teach? A study of job satisfaction among long-term high school teachers. *Teacher Education Quarterly, 28(3)*, 49.

Burke, D. D., Cavalluzzo, L. C., Hansen, M. L., & Harris, J. R. (1999). Relative pay and retention in Miami-Dade public schools: Summary of research. Miami, FL: Education Center Institute for Public Research. Retrieved October 28, 2008 from http://www.cna.org/documents/IPR11020Summary.pdf.

Business & Legal Reports (BLR). (n.d.) Cost of turnover for a single vacancy. [Excel spreadsheet]. Retrieved December 13, 2008 from http://compensation.blr.com/calculators.cfm.

Butt, R., & Retallick, J. (1999). Professional well-being and learning: A study of administrator-teacher workplace relationships. *Journal of Educational Enquiry, 3(1)*, 17-34.

Butterfi. (2005, February 9). School's out: The crisis in teacher retention. Retrieved July 21, 2009, from http://www.edutopia.org/print/1221.

Caldwell, O., & Courtis, S. (1925). *Then and now in education*. New York: Harcourt.

Campbell, B. (2002). The high cost of turnover: Why holding on to your employees can improve your bottom line. *Black Enterprise, December*, 61.

Carey, K. (1999). *The real value of teachers*. Washington, DC: Education Trust.

Carroll, T., & Fulton, K. (1999). The cost of teacher turnover. *Threshold Magazine, Spring 1999*. Retrieved December 15, 2008 from http://www.ciconline.org/thresholdspring04.

Cashwell, A. E. (2008). A study of the factors predicting attrition and contributing to the attrition rate of elementary public school teachers in Hampton Roads, Virginia. *Dissertation Abstract International, 69A(01)*. (UMI No. AAT 3295660). Retrieved July 20, 2009, from Dissertations and Theses database.

Cascio, W. (1991). *Costing human resources: The financial impact of behavior in organizations (3rd Ed.)*. Boston, MA: PWS-Kent.

Cavanagh, S. (2005). Teacher turnover cost. *Education Week, 25(2)*, 16.

Center for Innovative Thought. (2006). Teacher and the uncertain American future. Retrieved January 3, 2009 from http://www.collegeboard.com/prod_downloads/press/teachers-and-uncertain-american-future.pdf.

Certo, J. L., & Fox, J. E. (1999). *Recruiting and retaining teachers: A review of the literature*. Richmond, VA: Metropolitan Educational Research Consortium.

Certo, J. L., & Fox, J. E. (2002). Retaining quality teachers. *High School Journal, 86(1)*, 57-80.

Chaika, G. (2000). The teacher shortage: Apply, please! *Education World*. Retrieved December 10, 2008, from http://www.educationworld.com/a_admin/admin/admin155.shtml.

Chan, K., Gee, M., & Steiner, T. (2000). Employee happiness and corporate financial performance. *Financial Practice and Education, 10*, 47.

Chapman, D. W., & Green, M. S. (1986). Teacher retention: A future examination. *Journal of Educational Research, 79(5)*, 273-279.

Charlotte Associates for Education (1999, February). Role of principal leadership in increasing teacher retention: Creating a supportive environment. Retrieved June 17, 2009, from http://hcsao.org/files/Principal_Leadership.pdf.

Chuong, D. T. (2008). Teacher attrition: Perceptions of teachers and administrators. *Dissertation Abstract International, 69A(07)*. (UMI No. AAT 3323550). Retrieved September 5, 2009, from Dissertations and Theses database.

Coates, Y. D. (2009). A focused analysis of incentives affecting teacher retention: What might work and why. *Dissertation Abstract International, 70A(04)*. (UMI No. AAT 3353874). Retrieved July 20, 2009, from Dissertations and Theses database.

Coble, C. R. (2003). Alternative certification: A national perspective. [PowerPoint presentation.] Retrieved July 17, 2009, from http://www.ecs.org/html/special/tq/AlternativeLicensureII.ppt.

Cochran-Smith, M. (1999). Stayers, leavers, lovers, and dreamers: Insights about teacher retention. *Journal of Teacher Education, 55(5)*, 387-392.

Cochran-Smith, M. (2006, April). Stayers, leavers, lovers, and dreamers: Why people teach and why they stay (Occasional Paper Series). New York: Bank Street College of Education.

Cofer, D. (2000). *Informal Workplace* Learning. Practice Application Brief. NO 10. U.S. Department of Education: Clearinghouse on Adult, Career, and Vocational Education.

Colbert, J., & Wolff, D. (1992). Surviving in urban schools. *Journal of Teacher Education, 43*, 193-199.

Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. L. (1966). *Equity of educational opportunities*. Washington, DC: U. S. Government Printing Office.

Council of Chief State Officers Officers. (2007, September). 50-state analysis of the preparation of teachers and the conditions for teaching: results from the NCES Schools and Staffing Survey. Washington, DC: Author.

Council of the City of New York (1999). A staff report of the New York City Council Investigation Division on teacher attrition and retention. In *Hearing presented to the Committee on Oversight and Investigations*. New York, May 6, 1999.

Council of the City of New York. (2003). Good apples: Recruiting and retaining quality teachers in New York City. Report issued May 6, 2003.

Cox, J., Lengel, T., & Slack, D. (2003). Attracting and retaining the best. *Independent School, 63(1)*, 22-30.

Cox, L. (2001). Retaining special educators: Comment on Ax, Conderman, and Stephens. *NASSP Bulletin, 85(621)*, 72-75.

Crowe, E., Schaefer, B., & Barnes. G. (2007). The cost of teacher turnover in K-12 science and mathematics: What we know and what we need to know. Presented at the NCTAF Symposium on the Scope and Consequences of K12 Science and Mathematics Teacher Turnover, Racine, WI. Retrieved December 15, 2008 from http://www.nctaf.org/documents/ CostofTeacherTurnover_000.pdf.

Danielson, L. (2002). Developing and retaining quality classroom teachers through mentoring. *Clearing House, 75(4)*, 183-185.

Darling-Hammond, L. (1984). Beyond the commission reports: The coming crisis in teaching. Santa Monica, CA: Rand Corporation.

Darling-Hammond, L. (1996). The quiet revolution: Rethinking student development. *Educational Leadership, 53(6)*, 5-10.

Darling-Hammond, L. (1996). What matters most: A competent teacher for every child. *Phi Delta Kappan, 77*, 193-201.

Darling-Hammond, L. (1997). Education, equity, and the right to learn. In J. Goodlad & T. McMannon (Eds.), *The public purpose of education and schooling* (pp. 41-55). San Francisco: Jossey-Bass.

Darling-Hammond, L. (2000). *Solving the dilemmas of teacher supply, demand, and standards: How we can ensure a competent, caring, and qualified teacher for every child*. New York: National Commission on Teaching and America's Future.

Darling-Hammond, L. (2003). Keeping good teachers: Why it matters what leaders can do. *Educational Leadership, 60(8)*, 6-13.

Darling-Hammond, L. (2008). We need to invest in math and science teachers. *The Chronicle of Higher Education, 54(17)*, 3-4.

Darling-Hammond, L., & Berry, B. (1999). Recruiting teachers for the 21st century: The foundation for educational equity. *The Journal of Negro Education, 68(3)*, 254-279.

Darling-Hammond, L., & Sykes, G. (2003). Wanted: A national teacher supply policy for education: The right way to meet the "highly qualified teacher" challenge. *Education Policy Analysis Archives, 11(33)*, 1-57.

Davis, J., & Wilson, S. M. (2000). Principals' efforts to empower teachers: Effects on teacher motivation and job satisfaction and stress. *The Clearing House, 73(6)*, 349-353.

Darmon, R. Y. (1990). Identifying sources of turnover costs: A segmental approach. *Journal of Marketing, 54(2)*, 46-56.

Dee, J. R. (2002). Turnover intent in an urban community college: Strategies for faculty retention. *Community College Journal of Research and Practice, 28(7)*, 583-607.

Delisio, E. R. (2002). The wild world of teacher recruiting. *Education World.* Retrieved December 10, 2008, from http://www.education-world.com/a_admin/admin281.shtml.

Denlinger, S. L. (2002). Teaching as a profession: A look at the problem of teacher deficits. *Clearing House, 75(3)*, 116-117.

Dinham, S., & Scott, C. (1998). A three domain model of teacher and school executive career satisfaction. *Journal of Educational Administration, 36(4)*, 362-378.

Dolton, P., & Newson, D. (2003) The relationship between teacher turnover and school performance. *London Review of Education, 1(2)*, 131-140.

Dolton, P., & van der Klaauw, W. (1999). The turnover of teachers: A competing risks explanation. *Review of Economics and Statistics, 81(3)*, 543-550.

Donaldson, M. L. (2008). Teach for America teachers' careers: Whether, when, and why they leave low-income schools and the teaching profession. *Dissertation Abstract International, 69A(06)*. (UMI No. AAT 3319185). Retrieved September 11, 2009, from Dissertations and Theses database.

Donnelly, D. P, & Quirin, J. J. (n.d.). A comprehensive model of the employee's turnover decision process. Retrieved June 15, 2009, from http://hces.bus.olemiss.edu/conference/Comprehensive%20Model_%20Employee's%20Turnover%20Decision%20-%20Donnelly/OVERHEADS.doc.

Education Commission of the States. (1999). Teacher recruitment, preparation, and retention for hard-to-staff schools. Retrieved November 21, 2009, from http://www.ecs.org/ initiatives/ geringer/chicago%20hard-tostaff%20meeting%20report.htm.

Education Trust. (1999, Winter). *The real value of teachers: If good teachers matter, why don't we act like it?* Washington, DC: Author.

Education Trust. (2008, February). *Their fair share: How Texas-sized gaps in teacher quality shortchange low-income and minority students*. Washington, DC: Author.

Esch, C. E., Chang-Ross, C. M., Guha, R., Tiffany-Morales, J., & Shields, P. M. (1999). California's teaching force 1999: Key issues and trends. Santa Cruz, CA: The Center for the Future of Teaching and Learning.

Ettorre, B. (1997). Employee retention: Keeping the cream. *HR Focus, 74*, 1-3.

Eye, G. G. (1975). The superintendent's role in teacher evaluation, retention, and dismissal. *Journal of Educational Research, 68(10)*, 390-395.

Feng, L. (2006). Combating teacher shortages: Who leaves, who moves, and why. *Dissertation Abstract International, 68(02)*, 673. (UMI No. AAT 3252111). Retrieved June 20, 2009, from Dissertations and Theses database.

Feng, L. (2005). *Hire today, gone tomorrow: The determinants of attrition among public school teachers*. Retrieved March 5, 2009 from http://mpra,ub.uni-muenchen.de/589/.

Finn, Jr., C. E., & Kanstoroom, M. (2000). Improving, empowering, dismantling. *Public Interest, 140*, 64-73.

Fitchett, P. G. (2008). An examination of secondary social studies educators' intentions regarding staying or leaving the teaching profession. *Dissertation Abstract International, 69A(06)*. (UMI No. AAT 3310952). Retrieved June 6, 2009, from Dissertations and Theses database.

Fitz-enz, J. (1997). It's costly to lose new employees. *Workforce, 76*, 50-51.

Fitz-enz, J. (1998). Top 10 calculations for your HRIS. *HR Focus, 75*, 1.

Flynt, S. W., & Morton, R. C. (2009). The teacher shortage in America: Pressing concerns. *National Forum of Teacher Education Journal, 19(3)*, 1-5.

Fore III, C., Martin, C., & Bender, W. N. (2002). Teacher burnout in special education: The causes and the recommended solutions. *High School Journal, 86(1)*, 36-49.

Fox, J. E., & Certo, J. (1999, December). *Recruiting and retaining teachers: A review of the literature*. (ED-446-076). Richmond, VA: Metropolitan Educational Research Consortium.

Fuller, F. (1969). Concern of teachers: A developmental conceptualization. *American Education Research Journal, 6*, 203-226.

Futrell, M. H. (1999). Recruiting minority teachers. *Educational Leadership, 56(8)*, 30-33.

Galley, M. (1999). Texas model: Go directly to class without teacher training. *Education Week, 23(26)*, 1-3.

Gardner, R. D. (2006). The development of a theoretical model to predict retention, turnover, and attrition of K-12 music teachers in the United States: An analysis of the Schools and Staffing Survey and Teacher Followup Survey (1999-2001). *Dissertation Abstract International, 67A(04).* (UMI No. AAT 3214714). Retrieved June 6, 2009, from Dissertations and Theses database.

Garrison, L. (2006). Teacher attrition and retention along the Mexican border. *Bilingual Research Journal, 30(2)*, 367-384.

Gately, R. (1990). Cost of employee turnover. Retrieved January 3, 2009 from http://ourworld.compuserve.com/homepages/ GATELY/pp06trno.html.

George, N. L., & George, M. P. (1995). To leave or to stay? An exploratory study of teachers of students with emotional and behavioral disorders. *Remedial and Special Education, 16(4)*, 227-243.

Germuth, A. A. (2007). Cost study of a teacher induction program. Retrieved December 15, 2008 from http://www.compassconsultinggroup.org/resources/docs/reports/ Cost_Study_of_a_Teacher_Induction_Program.doc.

Gersten, R., Keating, T., Yovanoff, P., & Harniss, M. K. (2001). Working in special education: Factors that enhance special educators' intent to stay. *Exceptional Children, 67(4)*, 549-567.

Goldhaber, D., & Anthony, E. (2003, July). Indicators of teacher quality. New York: ERIC Clearinghouse on Urban Education.

Goldhaber, D., & Anthony, E. (2003). Teacher quality and student achievement. New York: ERIC Clearinghouse on Urban Education.

Goldhaber, D., & Brewer, D. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Education Policy Analysis Archives, 22(2)*, 129-145.

Gonzales, E., & Short, P. M. (1996). The relationship of teacher empowerment and principal power bases. *Journal of Instructional Psychology, 23(3)*, 210-216.

Gonzalez, L. E. (2005). A study of the factors contributing to the attrition rate of certified school teachers in Texas. *Dissertation Abstract International, 67A(02)*. (UMI No. AAT 3204089). Retrieved August 22, 2009, from Dissertations and Theses database.

Gould, G., & Yoakam, G. A. (1947). *The teacher and his work: A first course in education*. New York: Ronald Press.

Gray, W. T. (1948). Factors affecting teacher tenure in the Appalachian Highlands. *Rural Sociology, 13(3)*, 295-307.

Greenberg, D., & McCall, J. (1974). Teacher mobility and allocation. *Journal of Human Resources, 9(4)*, 480-502.

Grissmer, D. W., & Kirby, S. N. (1987, August). *Teacher attrition: The uphill climb to staff the nation's schools*. Santa Monica, CA: Rand Corporation.

Grissmer, D. W., & Kirby, S. N. (1991). *Patterns of attrition among Indiana teachers, 1965-1987*. Santa Monica, CA: Rand Corporation. (ERIC Document Reproduction Service No. ED355174)

Grissmer, D., & Kirby, S. N. (1997). Teacher turnover and teacher quality. *Teachers College Record, 99(1)*, 45-56.

Groff, P. J. (1962). The social status of teachers. *Journal of Educational Sociology, 36(1)*, 20-25.

Guarino, C., Santibanez, L., Daley, G., & Brewer, D. (1999). *A review of the research literature on teacher recruitment and retention*. Santa Monica, CA: RAND Corporation.

Guarino, C. M., Santibañez, L., & Daley, G. A. (2006). Teacher recruitment and retention: A review of the recent empirical literature. *Review of Educational Research, 76(2)*, 173-208.

Guttman, I., & Olkin, I. (1989). Retention or attrition models. *Journal of Educational Statistics, 14(1)*, 1-20.

Halford, J. M. (1998). Easing the way for new teachers. *Educational Leadership, 48(2)*, 46-49.

Hall, R. E. (1960). Teacher turnover in Nebraska public schools. *Dissertation Abstract International, 21(06)*, 1437. (UMI No. AAT 6004347). Retrieved October 23, 2008, from Dissertations and Theses database.

Hammond, G., & Onikama, D. (1997). *At risk teachers*. (Report No. 039 328). Honolulu, HI: Pacific Resources for Education and Learning. (ERIC Document Reproduction Service No. ED442796).

Hampton, J., & Selsor, M. (2002, February 27). Community colleges and teacher preparation: A powerful partnership. Paper presented at the Annual International Conference of the Chair Academy, Kansas City, MO.

Hancock, C. B. (2003). An examination of preservice teaching intensity in relation to in-service teacher retention and attrition. *Journal of Research in Music Education, 51(2)*, 166-178.

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (1999). The revolving door: A path-breaking study of teachers in Texas reveals that working conditions matter more than salary. *Education Next, Winter 1999*, 76-82.

Hanushek, E., Kain, J., & Rivkin, S. (1999). Why public schools lose teachers? *Journal of Human Resources, 39(2)*, 326-354.

Hare, D., & Heap, J. L. (2001, May). *Effective teacher recruitment and retention strategies in the Midwest: Who is making use of them?* Naperville, IL: North Central Regional Educational Laboratory.

Hare, D., Heap, J., & Raack, L. (2001). Teacher recruitment and retention strategies in the Midwest: Where are they and do they work? *Policy Issues*, *8*, 1-8.

Harper, C. E. (2008). Patching the hole in the bucket: Addressing the problem of teacher attrition via teacher retention. *Dissertation Abstract International, 69A(12)*, 4580. (UMI No. AAT 3339292). Retrieved July 20, 2009, from Dissertations and Theses database.

Harrell, P., Leavell, A., & vanTassel, F. (1999). No teacher left behind: Results of a five-year study of teacher attrition. *Action in Teacher Education, 26(2)*, 47-59.

Harris, D. N., & Adams, S. J. (2005). Understanding the level and causes of teacher turnover: A comparison with other professions. *Economics of Education Review, 26(3)*, 325-337.

Harris, L. (1999). Report on the status of public school education in California. Retrieved September 6, 2008, from http://justschools.gseis.ucla.edu/research/publications/Harris.pdf.

Hauenstein, P. (1999). Understanding turnover. Advantage Hiring Newsletter. Retrieved December 20, 2008 from http://wwwperformancefactorinc.com/WP/UnderstandingTurnover.PDF.

Haun, D. D., & Martin, B. N. (1999). Attrition of beginning teachers and the factors of collaboration and school setting. *Research in Middle Level Education Online, 27(2)*, 1-7.

Hawley, W. D. (1986). Toward a comprehensive strategy for addressing the teacher shortage. *Phi Delta Kappan, 67(10)*, 712-718.

Healy, G. (1999). Structuring commitments in interrupted careers: Career breaks, commitment and the life cycle in teaching. *Gender, Work, and Organization, 6(4)*, 185-201.

Heitmeyer, R. C. (2003). A new teacher induction program that works. Mt. Pleasant, MI: Central Michigan University.

Henke, R. R., Chen, X., & Geis, S. (2000). *Progress through the teacher pipeline: 1992-93 college graduate and elementary/secondary school teachers as of 1997* (NCES 2000-152). Washington, DC: National Center for Education Statistics.

Henry, M. (1986). Strengths and needs of first year teachers. *Teacher Educator, 22(2)*, 10-18.

Herbert, K. S., & Ramsey, M. C. (1999, September). *Teacher turnover and shortages of qualified teachers in Texas public school districts*. Retrieved September 25, 2009, from http://www.sbec.state.tx.us.

Hernandez, N. (2007, June 21). Teacher turnover costs systems millions, study projects. *Washington Post*. Retrieved June 8, 2009 from http://www.washingtonpost.com/wp-dyn/content/article/2007/06/20/AR2007062002300.html.?nav=emailpage.

Hertert, L. (1995). Does equal funding for districts mean equal funding for classroom students? Evidence from California. In Lawrence O. Picus & James L. Wattenbarger (Eds.), *Where does the money go? Resource allocation in elementary and secondary schools* (pp. 71-84). Thousand Oaks, CA: Corwin Press.

Hertzner, A. (2003, January 17). Teacher attrition at 12-year high: Retirements main push in exodus, officials say. *Milwaukee Journal Sentinel*. Retrieved January 20, 2009, from http://www.isonline.com/news/state/jan03/111574.asp.

Hill, D. M., & Barth, M. (1999). NCLB and teacher retention: Who will turn out the lights? *Education and the Law, 16(2-3)*, 173-181.

Hinkin, T. R., & Tracey, J. B. (2000). The cost of turnover: Putting a price on the learning curve. *Cornell Hotel and Restaurant Administration Quarterly, 41*, 14-21.

Hitz, R. (2002). Cost of teacher turnover in Hawai'i. Retrieved January 4, 2009 from http://www.hawaii.edu/hepc/pdf/ Briefs/CostofTeacherTurnover.pdf.

Hochschild, J., & Scovronick, N. (2003). *The American dream and the public school*. New York: Oxford University Press.

Hope, W. C. (1999). Principals' orientation and induction activities as factors in teacher retention. *Clearing House, 73(1)*, 54-56.

Howard, C. T. (2003). Who receives the short end of the shortage? Implications of the U. S. teacher shortage on urban schools. *Journal of Curriculum and Supervision, 18(2)*, 142-160.

HR Chally Institute. (n.d.) Employee turnover cost calculator. Retrieved January 3, 2009 from www.chally.com/ turnover_cost_calculator.htm.

Huberman, M. (1993). Burnout in teaching careers. *European Education, 25(3)*, 47-65.

Hudson, S. P. (1996). Science teacher supply in the United States. *School Science and Mathematics, 96(3)*, 133-140.

Huff, B. S. (2002). Systems modeling for integrated fiscal planning education. *Dissertation Abstract International, 63A(11)*, 3803. (UMI No. AAT 3071110). Retrieved June 20, 2009, from Dissertations and Theses database.

Hull, J. W. (1999). Solving the shortage: Tackling the root causes of teacher shortage will help us solve it. *Virginia Journal of Education, 76(6)*, 7-10.

Hull, J. W. (2003, April). *Filling in the gaps: Solving teacher shortages*. Atlanta, GA: Southern Office of the Council of State Governments.

Hussar, W. J. (1998). *Predicting the need for newly hired teachers in the United States to 2008-2009* (NCES 1999-026). Washington, DC: National Center for Education Statistics.

Imazeki, J. (2000). School finance reform and the market for teachers. *Dissertation Abstract International, 61A(08)*, 3267. (UMI No. AAT 9983790). Retrieved June 20, 2009, from Dissertations and Theses database.

Ingersoll, R. M. (1998). The problem of out-of-field teaching. *Phi Delta Kappan, 79(10)*, 773-776.

Ingersoll, R. (1999). *Why do high poverty schools have difficulty staffing their classrooms with qualified teachers*. University of Pennsylvania: Center for American Progress.

Ingersoll, R. M. (2000, February). *Turnover among mathematics and science teachers in the United States*. Washington, DC: National Commission on Mathematics and Science Teaching for the 21st Century.

Ingersoll, R. M. (2001a). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38(3)*, 499-534.

Ingersoll, R. M. (2001b). *Teacher turnover, teacher shortages, and the organization of schools*. Seattle, WA: Center for the Study of Teaching and Policy.

Ingersoll, R. (2002a, August 15). High turnover plague schools. *USA Today*. Retrieved January 31, 2009 from http://repository.upenn.edu/cgi/viewcontent.cgi?article=1130&context=gse_pubs.

Ingersoll, R. M. (2002b). Holes in the teacher supply bucket. *The School Administrator, 59(3)*, 42-43.

Ingersoll, R. M. (2002c). The teacher shortage: A case of wrong diagnosis and wrong prescription. *NASSP Bulletin, 86(631)*, 16-31.

Ingersoll, R. M. (2003a). Is there a shortage among mathematics and science teachers? *Science Educator, 12(1)*, 1-9.

Ingersoll, R. (2003b). *Is there really a teacher shortage*? University of Washington: Center for the Study of Teaching and Policy.

Ingersoll, R. M. (2005, February 28). Why do disadvantaged schools have difficulty staffing their classrooms with qualified teachers? In *Closing the Teacher Gap*. Retrieved June 15, 2009, from http://www.americanprogress.org/site/pp.aspx?c=biJRJ8OVF&b=307371.

Ingersoll, R., & Perda, D. (2006, November). What the data tells us about shortages of mathematics and science teachers. Presented at the NCTAF Symposium of the Scope and Consequences of K12 Science and Mathematics Teacher Turnover, Racine, WI.

Ingersoll, R., & Smith, T. M. (1999). Do teacher induction and mentoring matter? *National Association of Secondary School Principals Bulletin, 88(638)*, 28-40.

Ingersoll, R., & Smith, T. (2003). The wrong solution to the teacher shortage. *Educational Leadership, 60(8)*, 30-33.

Isaac, S., & Michael, W. B. (1971). *Handbook in research and evaluation*. San Diego, CA: Robert R. Knapp.

Jacob, B. A. (2007). The challenges of staffing urban schools with effective teachers. *The Future of Children, 17(1)*, 129-153.

Jalongo, M. R., & Heider, K. (2006). Editorial teacher attrition: An issue of national concern. *Early Childhood Education Journal, 33(6)*, 379-380.

Johnson, A. W. (1957). Source and supply of teachers. *Accounting Review, 32(2)*, 241-242.

Johnson, E. D. (1967). *An analysis of factors related to teacher satisfaction-dissatisfaction*. Unpublished doctoral dissertation, Auburn University, Auburn, Alabama.

Johnson, R. W. (1957). Source and supply of teachers. *The Accounting Review, 32(2)*, 241-242.

Johnson, S. M. (2006, October 17). Building a skilled teaching force for improved student learning: An international perspective. Paper prepared for the 2006 Aspen-OECD Bellagio Seminar, Bellagio, Italy.

Johnson, S. M., & Birkeland, S. E. (2003). Pursuing a "sense of success": New teachers explain their career decisions. *American Educational Research Journal, 40(3)*, 581-617.

Johnson, S. M., & Birkeland, S. E. (2003). The schools that teachers choose. *Educational Leadership, 60(8)*, 20-24.

Johnson, S. M., & Kardos, S. M. (2002). Keeping new teachers in mind. *Educational Leadership, 59(6)*, 12-16.

Johnson, S. M., Kardos, S. M., Kauffman, D., Liu, E., & Donaldson, M. L. (1999). The support gap: New teachers' early experiences in high-income and low-income schools. *Education Policy Analysis Archives, 12(61)*, 1-25.

Johnson, S. M., & The Project on the Next Generation of Teachers. (1999). *Finders and keepers: Helping new teachers survive and thrive in our schools*. San Francisco, CA: Jossey-Bass.

Joinson, C. (2000). Capturing turnover costs. *HR Magazine, 45(7)*, 107-119.

Jones, H. (1999). A real millennium challenge. Retrieved January 3, 2009 from http://www.achievemax.com/newsletter/ 99issue/cuturnover.htm.

Jorissen, K. (2002). Retaining alternate route teachers: The power of professional integration in teacher preparation and induction. *High School Journal, 86(1)*, 45.

Kane, P. R., & Orsini, A. J. (1999). Attracting and retaining teachers of color. *Independent School, 59(1)*, 32-39.

Keller, B. (2003, April 30). Question of teacher turnover sparks research interest. *Education Week, 22(33)*, 8.

Kelsey, K. D. (2006). Teacher attrition among women in secondary agricultural education. *Journal of Agricultural Education, 47*, 117-129.

Kentucky Legislative Research Commission. (2007). A compendium of state education rankings. Frankfort, Kentucky: Office of Education Accountability. Received May 6, 2010, from http://www.lrc.ky.gov/lrcpubs/RR345.pdf).

King, S. H. (1993). The limited presence of African-American teachers. *Review of Educational Research. 63(2)*, 115-149.

King-Rice, J. K. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. Washington, DC: Economic Policy Institute.

Kirby, S. N., & Grissmer, D. W. (1993, June). *Teacher attrition: Theory, evidence, and suggested policy options*. Santa Monica, CA: RAND Corporation. (ERIC Document Reproduction Service No. ED400240)

Koerner, J. D. (1963). *Miseducation of American teachers*. Boston: Houghton Mifflin.

Kongshem, L. (1999). Smart data: Mining the school district data warehouse. *The American School Boards Journal, 186(9)*, 14-17.

Kopkowski, C. (2008). Why they leave. *Ski Country Educator, March 2008*. Retrieved January 31, 2009 from http://www.skicountryuniserv.org/newsletter/documents/ SkiCountryEducatorMarch2008page2.pdf.

Krei, M. S. (1998). Intensifying the barriers: The problem of inequitable teacher allocation in low-income urban schools. *Urban Education, 33(1)*, 71-94.

Laczko-Kerr, I., & Berliner, D. C. (2002). The effectiveness of "Teach for America" and other under-certified teachers on student academic achievement: A case of harmful public policy. *Educational Policy Analysis Archives, 19(37)*. Retrieved July 8, 2009, from http://epaa.asu.edu/epaa/v10n37/.

Ladson-Billings, G. (2001). *Crossing over to Canaan: The journey of new teachers in diverse classrooms*. San Francisco, CA: Jossey-Bass.

Lankford, H., Loeb, S., & Wycoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis, 24(1)*, 37-62.

Lasagna, M. (2009, May). *Key issue: Increasing teacher retention to facilitate the equitable distribution of effective teachers*. Washington, DC: National Comprehensive Center for Teacher Quality.

Lee, K. (2001). ROI calculators help gauge benefit, turnover costs. *Benefits Finance, November*, 11-12.

Leggett, S. F., & Vincent, W. S. (1948). Effects of staff shortage. *Phi Delta Kappan, 30(4)*, 101-102.

Levin, H. M. (1970). A cost-effectiveness analysis of teacher selection. *Journal of Human Resources, 5(1)*, 24-33.

Lind, S. A. (2003). Teachers' perceptions of culture in low and high attrition schools. *Dissertations Abstract International, 64(12)*, 4294. (UMI No. 3116430). Retrieved October 8, 2009, from Dissertations and Theses database.

Lord, H. G. (1973, July). Ex post facto studies as a research method. Special Report No. 7320. Washington, DC: Bureau of Education for the Handicapped.

Lortie, D. (1975). *Schoolteacher*. Chicago: University of Chicago Press.

Lucas, T., & Robinson, J. (2003). Reaching them early: Identifying and supporting prospective teachers. *Journal of Education for Teaching, 29(2)*, 159-175.

Luekens, M. T., Lyter, D. M., & Fox, E. E. (1999). Teacher attrition and mobility: Results from the Teacher Follow-up Survey, 2000-2001. *Education Statistics Quarterly, 6(3)*, 1-10.

MacDonald, D. (1999). Teacher attrition: A review of literature. *Teaching and teacher education, 15(8)*, 835-848.

Madsen, C. K., & Hancock, C. B. (2002). Support for music education: A case study of issues concerning teacher retention and attrition. *Journal of Research in Music Education, 50(1)*, 6-20.

Makovec, M. G. (2008). A study of the factor predicting attrition and contributing to the attrition rate of high school teachers in Hampton Roads, Virginia. *Dissertation Abstract International, 68A(12)*. (UMI No. AAT 3291606). Retrieved July 20, 2009, from Dissertations and Theses database.

Manville, B. (n.d.). Talking human capital with professor Gary S. Becker, Nobel laureate. Retrieved September 7, 2009, from http://www.linezine.com/7.1/interviews/gbbmthc.html.

Marlow, L., & Inman, D., & Betancourt-Smith, M. (1997). Beginning teachers: Are they still leaving the profession? *Clearing House, 70(4)*, 211-216.

Marshall, I. H., & Marshall, R. L. (2003, January). Recruitment, retention, and renewal: Eliminating teacher shortage. Paper presented to the Hawaii International Conference on Education Annual Conference, Honolulu, Hawaii.

Martinez-Garcia, C., & Slate, J. (2009, February 14). *Teacher turnover: A conceptual analysis*. Retrieved October 15, 2009, from the Connexions Web site: http://cnx.org/content/m18916/1.3/.

Marzano, R. (2003). *What works in schools: Translating research into action*. Alexander, VA: Association for Supervision and Curriculum Development.

McCaffrey, D. F., Lockwood, J. R., Koretz, D. M., & Hamilton, L. S. (2003). *Evaluating value-added models for teacher accountability*. Santa Monica, CA: RAND Corporation.

McCollough, F. (1998). Employee satisfaction: The key to improved quality, customer satisfaction, and profits. Foundations for Excellence. Retrieved December 15, 2008 from http://www.foundations-usa.com/Pdfs/empsat.pdf.

McCreight, C. (2000). *Teacher attrition, shortage, and strategies for teacher retention*. (ERIC Document Reproduction Service No. ED 444 986).

McKinney, S. E., Berry, R. Q., Dickerson, D. L., & Campbell-Whately, G. (2007). Addressing urban high-poverty school teacher attrition by addressing urban high-poverty school teacher retention: Why effective teachers persevere. *Educational Research and Review, 3(1)*, 1-9.

McGuinn, J. (1957). Board presidents evaluate school problems. *American School Board Journal*, 45.

Meier, D., Kohn, A., Darling-Hammond, L., Sizer, T. R., & Wood, G. (1999). *Many children left behind: How the No Child Left Behind Act is damaging our children and our schools*. Boston, MA: Beacon Press.

Merrow, J. (1999, October 6). Teacher shortage: Wrong diagnosis, phony cures. *Education Week, 19(6)*, 64-67.

Merseth, K. K. (1992). First aid for first-year teachers. *Phi Delta Kappan*, 73(9), 678-683.

Meryman, R. (1962, November 16). How we drive teachers to quit: They can't take the system – and you can't blame them. *Life Magazine, 53(20)*, 104-112.

Metz, S. A., & Fleischman, H. L. (1974). Teacher turnover in public schools: Fall 1968 to fall 1969. (Circular no. 74-11115). Washington, DC: U. S. Department of Health, Education, and Welfare.

Mezzacappa, D. (2003, March 12). Teacher attrition sapping urban schools. *The Philadelphia Inquirer*. Retrieved September 20, 2009, from http://www.philly.com/mld/inquirer/5369853.html.

Milanowski. A., & Odden, A. (2007). A new approach to the cost of teacher turnover. Working Paper 13, Daniel J. Evans School of Public Affairs, University of Washington. Retrieved December 15, 2008 from http://www.crpe.org/cs/crpe/view/ csr_pubs/172.

Miller, M. D., Brownell, M. T., & Smith, S. W. (1999). Factors that predict teachers staying in, leaving, or transferring from the special education classroom. *Exceptional Children, 65(2)*, 201-218.

Minarik, M. M., Thornton, B., & Perreault, G. (2003). Systems thinking can improve teacher retention. *Clearing House, 76(5)*, 230-234.

Miners, Z. (2007). Teacher turnover costs the nation over $7.3 billion. *District Administration, August 2007*. Retrieved June 8, 2009 from http://www.thefreelibrary.com/District +Administration/2007/August/1-p597.

Missouri Economic Research and Information Center [MERIC] (2009). Cost of Living Data Series: 4th Quarter 2009. Retrieved May 6, 2010, from http://www.missourieconomy.org/indicators/cost_of_living/index.stm.

Moir, E., & Gless, J. (2001). Quality induction: An investment in teachers. *Teacher Education Quarterly, 28(1)*, 109-114.

Mont, D., & Rees, D. I. (1996). The influence of classroom characteristics on high school teacher turnover. *Economic Inquiry, 34(1)*, 152-167.

Murnane, R. J. (1984). Selection and survival in the teacher labor market. *The Review of Economics and Statistics, 66(3)*, 513-518.

Murnane, R. J., & Olsen, R. J. (1989a). The effects of salaries and opportunity costs on duration in teaching: Evidence from Michigan. *Review of Economics and Statistics, 71(2)*, 347-352..

Murnane, R. J., & Olsen, R. J. (1989b). Will there be enough readers? *American Economic Review, 79(2)*, 242-246.

Murnane, R. J., Singer, J. D., Willett, J. B., Kemple, J., & Olsen, R. J. (1991). *Who will teach? Policies that matter*. Cambridge, MA: Harvard University Press.

Nagy, C. J., & Wang, N. (2006). The alternate route teachers' transition to the classroom: Preparation, support, and retention. Paper presented at the annual meeting of American Educational Research Association, San Francisco, CA.

National Center for Education Statistics (NCES). (1998). The condition of education 1998. U. S. Department of Education, Office of Educational Research and Improvement. Washington, DC: Author.

National Center for Education Statistics. (2000). *Progress through the teacher pipeline*. United States Department of Education. Washington, DC: Author.

National Center for Education Statistics. (2003). *Participation in education*. Retrieved April 30, 2009, from http://nces.ed.gov/programs/coe/2003/section1/indicator01.asp.

National Center for Education Statistics. (2007). *Teacher attrition and mobility: Results from the 1999-05 Teacher Follow-up Survey*. United States Department of Education. Washington, DC: Author.

National Commission on Teaching and America's Future (NCTAF). (1996). *What matters most: Teaching for America's future*. New York: Author.

National Commission on Teaching and America's Future. (2003). *No dream denied: A pledge to America's children*. Washington, DC: Author.

National Commission on Teaching and America's Future. (2007a). The Cost of Teacher Turnover Study and Cost Calculator. Retrieved May 26, 2009 from http://www.nctaf.org/ resources/demonstration_projects/turnover/TeacherTurnoverCost Study.htm.

National Commission on Teaching and America's Future. (2007b). *The high cost of teacher turnover*. (Policy brief). Washington, DC: Author.

National Commission on Teaching and America's Future. (2007c). Statements from education leaders in support of NCTAF's cost of teacher turnover study. Retrieved May 26, 2009, from http://www.nctaf.org/resources/demonstration_projects/ turnover/ CTTStatements.htm.

National Commission on Teaching and America's Future. (2007d). NCTAF policy brief says teacher dropouts cost nation more than $7 billion annually. (Press release). Retrieved May 26, 2009, from http://nctaf.org/resources/news/press_ releases/CTT.htm.

National Commission on Teaching and America's Future. (n.d.) Teacher turnover charts studies. Retrieved December 15, 2008, from http://www.nctaf.org/documents/charts.pdf.

National Education Association (NEA). (1924). *The problem of teacher tenure*. Washington, DC: National Education Association, Division of Research.

National Education Association. (1962). *Teacher supply and demand in public schools*. NEA Research Memo. Washington, DC: Author.

National Education Association. (1970). *Teacher supply and demand in public schools*. NEA Research Memo. Washington, DC: Author.

National Education Association. (1972). *Teacher supply and demand in public schools*. NEA Research Memo. Washington, DC: Author.

National Education Association. (2003, October). *Attracting and keeping quality teachers*. Retrieved November 15, 2009, from http://www.nea.org/teachershortage/.

National Education Association. Teacher Salaries 2008. [*Research Database 2008*]. Retrieved May 6, 2010, from http://www.nea.org/home/29402.htm.

Neild, R. C., Useem, E., & Farley, E. (2005). The quest for quality: Recruiting and retaining teachers in Philadelphia. Research for Action, Philadelphia, Pennsylvania.

Nelson, D. B., & Low, G. R. (2003). *Emotional intelligence achieving academic and career excellence*. Upper Saddle River, New Jersey: Prentice Hall.

New Teacher Center at the University of California (2007, Fall). *New teacher support pays off: A return on investment for educators and kids*. Santa Cruz, CA: Author.

Ng, J. C. (2003). Teacher shortages in urban schools: The role of traditional and alternative certification routes in filling the voids. *Education and Urban Society, 35(4)*, 380-398.

Norton, M. S. (1999). Teacher retention: Reducing costly teacher turnover. *Contemporary Education, 70(3)*, 52-55.

Noyce, P., Perda, D., & Traver, R. (2000). Creating data-driven schools. *Educational Leadership, 57(5)*, 52-56.

O'Brien, C. A. (2007). An analysis of middle school teacher attrition in a large, suburban school district, 2002-2007. *Dissertation Abstract International, 68A(11)*. (UMI No. AAT 3289808). Retrieved June 20, 2009, from Dissertations and Theses database.

Olaniyan, D. A., & Okemakinde, T. (2008). Human capital theory: Implications for educational development. *European Journal of Scientific Research, 24(2)*, 157-162.

Olsen, B., & Anderson, L. (1999). Courses of action: A report on urban teacher career development. *Urban Education, 42(1)*, 5-29.

Olson, L. (2000). Sweetening the pot: Who should teach?: Quality Counts 2000. *Education Week, 19(28)*, 28-30, 33-34.

Olson, L., & Jerald, C. D. (1998). The teaching challenge. *Education Week, 17(17)*, 16-19.

Ondrich, J., Pas, E., & Yinger, J. (2005, May). The determinants of teacher attrition in upstate New York. Paper presented at Conference on Teacher Quality and Teacher Attrition, Syracuse University.

Osterholm, K., Horn, D. E., & Johnson, W. M. (2006). Finders keepers: Recruiting and retaining teachers in rural schools. *National Forum of Teacher Education Journal*, 17(3), 1-12.

Overstreet, W. (1960). *A study of teacher turnover, in selected districts of New York state*. Unpublished doctoral dissertation, Columbia University, New York City.

Patterson, N. C., Roehrig, G. H., & Luff, J. A. (2003). Running the treadmill: Explorations of beginning high school science teacher turnover in Arizona. *High School Journal, 86(4)*, 14-24.

Peck, B. J. (2002). A high school principal's challenge: Toward work environments that enhance new teacher satisfaction and retention. *Dissertations Abstract International, 63(11)*, 3807. (UMI No. 3072824). Retrieved October 8, 2009, from Dissertations and Theses database.

Peterson, S. L. (1999). Toward a theoretical model of employee turnover: A human resource development perspective. *Human Resource Development Review, 3(3)*, 209-227.

Phillips, J. D. (1990). The price tag on turnover. *Personnel Journal, 69(12)*, 58-61.

Pinkovitz, W. H., Moskal, J., & Green, G. (1997). How much does your employee turnover cost? University of Wisconsin Cooperative Extension Center for Community Economic Development. Retrieved November 6, 2008 from www.uwex.edu/ces/cced/publicat/ turn.html.

Pipho, C. (1998). A 'real' teacher shortage. *Phi Delta Kappan, 80(3)*, 181-182.

Planty, M., Hussar, W., Snyder, T., Provasnik, S., Kena, G., Dinkes, R., KewalRamani, A., & Kemp, J. (2008). *The condition of education 2008* (NCES 2008-031). Washington, DC: U. S. Department of Education, National Center for Education Statistics, Institute of Education Services.

Planz, C. A., & Gibson, R. O. (1971). Staff differentiation and equity among early career male teachers. *Education, 91(3)*, 223-236.

Plecki, M. L., Elfers, A. M., Loeb, H., Zahir, A., & Knapp, M. S. (2005). *Teacher retention and mobility: A look inside and across school districts in Washington state*. Seattle, WA: Center for Strengthening the Teaching Profession. Retrieved January 21, 2009, from http://depts.washington.edu/ctpmail/PDFs/ TeacherRetention.pdf.

Prince, C. D. (2002). Missing: Top staff in bottom schools. *School Administrator, 59(7)*, 6-7, 9, 11-14.

Provasnik, S., & Dorfman, S. (2005). *Mobility in the teacher workforce* (NCES 2005-114). Washington, DC: U. S. Department of Education, National Center for Education Statistics.

Public Law 107-110. (2002). No child left behind act: Reauthorization of the elementary and secondary act. Retrieved December 15, 2008, from http://www.ed.gov.

Pusey, B. (2009). Attrition rate of special education teachers. Action Research Proposal/IRB Final Project, Kaplan University.

Pytel, B. (2007). Teacher turnover costs. Retrieved January 4, 2009 from http://educationalissues.suite101.com/article.cfm/ teacher_turnover_costs.

Quartz, K. H. (2003). "Too angry to leave": Supporting new teachers' commitment to transform urban schools. *Journal of Teacher Education, 54(2)*, 99-111.

Quartz, K. H., Lyons, K. B., Masyn, K., Olsen, B., Anderson, L., Thomas, A., Goode, J., & Horng, E. (1999). *Urban teacher retention policy: A research brief*. Los Angeles, CA: UCLA's Institute for Democracy, Education, and Access (IDEA).

Reeves, D. (1999). *Accountability for learning: How teachers and school leaders can take charge*. Alexandria, VA: Association for Supervision and Curriculum Development.

Reichardt, R. (2008). Teacher attrition and teacher diversity in Colorado. Paper presented at Conference on the State of Teaching in Colorado, 2008. Denver: Center of Education Policy Analysis.

Rennie Center for Education Research and Policy (2006). The impact of teacher attrition. [PowerPoint presentation.] Retrieved June 6, 2009 from http://www.renniecenter.org/ Teacher%20attrition%20slides-final-web.pdf.

Rennie Center for Education Research and Policy. (2009, Spring). Ready for the next challenge: Improving the retention and distribution of excellent teachers in urban schools. Cambridge, MA: Author.

Retaining Teachers. (n.d.) Teacher turnover: Studies. Retrieved December 7, 2008 from http://www.retaining teachers.com/about.html.

Richards, J. (2007). How effective principals encourage their teachers. *Principal, 86(3)*, 48-50.

Rollefson, M. R. (1993). *Teacher supply in the United States: Sources of newly hired teachers in public and private schools*. Washington, DC: National Center for Education Statistics.

Ruby, A. M. (2002). Internal teacher turnover in urban middle school reform. *Journal of Education for Students Placed at Risk, 7(4)*, 379-406.

Ruhland, S. (2001). *Factors influencing the turnover and retention of Minnesota's secondary technical education teachers*. (ERIC Document Reproduction Service No. ED 463 414).

Rush, G. S. (1983). Corrective measures in the teacher shortage: Consequences and conclusions. *Education, 104(1)*, 34-37.

Sackmann, G. (2003). Resources: The cost of teacher turnover. Retrieved January 3, 2009 from http://www.freelists .org/post/nethappenings/RESOUR-The-Cost-of-Teacher-Turnover.

Salvato, N. (1999, November 22). Billions wasted on teacher attrition. Retrieved June 6, 2009 from http://www.opinioneditorials.com/guestcontributors/nsalvato_19991123.html.

Sargent, B. (2003). Finding good teachers – and keeping them. *Educational Leadership, 60(8)*, 44-47.

Scherff, L. (n.d.) Why teachers come and go: What we can do to help them stay. Retrieved March 5, 2009 from http://www.allacademic.com//meta/p_mla_apa_research_citation /0/3/5/1/2/pages35128/p35128-1.php.

Schlechty, P. C., & Vance, V. C. (1981). Do academically able teachers leave education? The North Carolina Case. *Phi Delta Kappan, 63*, 106-112.

Schulz, I. L., & Teddlie, C. (1989). The relationship between teacher's job satisfaction and their perceptions of principals' use of power and school effectiveness. *Education, 109(4)*, 461-468.

Scott, C. W. (1940). Teacher tenure. *Review of Educational Research, 10(3)*, 235-239.

Seavey, D. (1999). The cost of frontline turnover in long-term care. Washington, DC: Better Job Better Care – Institute for the Future of Aging Services. Retrieved October 28, 2008 from http://www.directcareclearinghouse.org/download/ TOCostReport.pdf.

Shaffer, E., Nesselrodt, P., & Stringfield, S. (1997). *Impediments to reform: An analysis of destabilizing issues in ten promising programs*. Arlington, VA: Educational Research Service.

Shakrani, S. (2008). Teacher turnover. Retrieved January 4, 2009 from http://www.epc.msu.edu/publications/REPORT/ Teacher_Turnover.pdf.

Shann, M. H. (1998). Professional commitment and satisfaction among teachers in urban middle schools. *Journal of Educational Research, 92(2)*, 67-73.

Shanker, A. (1987). A comment of restructuring schooling. *Journal of Economic Education, 18(1)*, 66-67.

Shelton-Harris, A. C. (1999). Career commitment and retention strategies for new teachers: A national study. *Dissertations Abstract International, 65A(04)*, 2173. (UMI No. 3130618). Retrieved October 8, 2009, from Dissertations and Theses database.

Shen, J. (1997). Teacher retention and attrition in public schools: Evidence from SASS91. *Journal of Education Research, 91(2)*, 81-88.

Shockley, R., Guglielmino, P., & Watlington, E. (2006). The costs of teacher attrition. Presented at the International Congress for School Effectiveness and Improvement, Fort Lauderdale, FL. Retrieved October 28, 2008 from http://www.leadership.fau.edu/ICSEI2006/ Papers/ Shockley%20Guglielmino%20and %20Watlington.pdf.

Shockley, R., Guglielmino, P., & Watlington, E. (2007). A national crisis in teacher education: What are the costs? Retrieved January 4, 2009 from http://www.pearsonschool.com/ live/assets/200727/2006_11ShockleyGuglielminoWatlington_558_1 .pdf.

Shockley, R., Watlington, E., Carlstrom, D., Huie, K., Morris, J. D., & Lieberman, M. (2005, November). The relationships between demographic variables and teacher retention: A longitudinal study. Paper presented at the Florida Educational Research Association (FERA), Miami. FL.

Skinner, K. (2001, March 1). Requirements mandate districts have teacher orientation, induction and mentoring programs. Retrieved June 1, 2009, from http://www.massteacher.org/career/state_cert/state_cert_2002-09-26.cfm.

Smith, D., & Milstein, M. M. (1984). Stress and teachers: Old wine in new bottles. *Urban Education, 19(1)*, 39-51.

Smith, H. L., & Watkins, W. E. (1978). Managing manpower turnover costs. *Personnel Administrator, 23(4)*, 46-50.

Smith, S. C., & Piele, P. K. (1997). *School leadership: Handbook for excellence*. University of Oregon: ERIC Clearinghouse on Educational Management.

Sorensen, N. (1995). Measuring HR for success. *Training and Development, 49*, 49-51.

Southeast Center for Teaching Quality (SECTQ). (2003). The teaching quality indicators project: Better data for better teaching quality. Retrieved December 15, 2008, from http://www.teachingquality.org.

Spector, P. E. (1997). *Job satisfaction: Application, assessment causes, and consequence*. Thousand Oaks, CA: Sage.

Spiedel, M. E. (2005). Teacher attrition and retention in exceptional student education: An evaluation of the skills, tips and routines for teacher success (STARTS) initiative of Volusia County, Florida schools. *Dissertation Abstract International, 66A(06)*, 2173. (UMI No. AAT 3178971). Retrieved June 6, 2009, from Dissertations and Theses database.

Spoehr, L. (2003). Where do principals come from? *Journal of Education, 184(1)*, 57-68.

Stanford, B. H. (2001). Reflections of resilient, persevering urban teachers. *Teacher Education Quarterly, 28(3)*, 75-87.

Stansbury, K., & Zimmerman, J. (2002). Smart induction programs become lifelines for the beginning teacher. *Journal of Staff Development, 23(4)*, 10-14.

Stevenson, Z., Dantley, S. J., & Holcomb, Z. J. (1999). Factors influencing the retention of mathematics and science teachers in urban systemic initiative school districts: Administrative perspectives. *Journal of Negro Education, 68(3)*, 442-450.

Stinebrickner, T. R. (2001). A dynamic model of teacher labor supply. *Journal of Labor Economics, 19(1)*, 196-230.

Stoddart, T. (1993). Who is prepared to teach in urban schools? *Education and Urban Society, 26(1)*, 29-48.

Stronge, J. H., & Tucker, P. D. (2000). *Teacher evaluation and student achievement*. Washington, DC: National Education Association.

Swick, K. J., & Colvin, R. (1973). Student teachers' perceptions of two urban school principals. *Education, 93(3)*, 277-281.

Taylor, T. (1993). The true cost of turnover and how to prevent it. *Journal of Property Management, 58(December)*, 20-22.

Thompson, D. C., Wood, R. C., & Crampton, F. E. (2008). *Money and schools*. Larchmont, NY: Eye on Education.

Thornton, R. J. (1979). The elasticity of demand for public school teachers. *Industrial Relations, 18(1)*, 86-91.

Tice, T. (1991). Why teachers quit. *Education Digest, 56(8)*, 37-38.

Tillman, L. C. (2003). Mentoring, reflection, and reciprocal journaling. *Theory Into Practice, 42(3)*, 226-233.

Towery, I. D., Salim, K., & Hom, V. (2009, June). Hiring (and keeping) urban teachers: A coordinated approach to new teacher support. Boston, MA: Boston Plan for Excellence and Boston Public Schools.

Tracey, J. B., & Hinkin, T. R. (2008). Contextual factors and cost profiles associated with employee turnover. *Cornell Hospitality Quarterly, 49*, 12-27.

Tulsa Public Schools (TPS). (2008, September). Application for Oklahoma Quality Achievement Award. Retrieved September 3, 2009, from http://www.tulsaschools.org.

Tulsa Public Schools (TPS). (2009, July). Teacher assessment initiative. Gates Foundation proposal. Retrieved August 20, 2009, from http://www.tulsaschools.org.

Tulsa Public Schools. (2010). *Teacher employee data - Resignations*. [Data file.] Retrieved January 21, 2010, from Tulsa Public Schools Project Management Office.

Turner, D. C. (2003). Teacher attrition in North Carolina schools. *Dissertations Abstract International, 64A(12)*, 4307. (UMI No. 3117427). Retrieved October 8, 2009, from Dissertations and Theses database.

Tutorial on Human Capital Theory. (n.d.). Retrieved September 7, 2009, from http://faculty.washington.edu/jacoby/BLS345/%20HCtutorial.html.

Tye, B., & O'Brien, L. (2002). The teacher shortage: Why are experienced teachers leaving the profession? *Phi Delta Kappan, 84(1)*, 1-9.

Tziner, A., & Birati, A. (1996). Assessing employee turnover costs: A revised approach. *Human Resource Management Review, 6(2)*, 113-122.

U. S. Bureau of the Census. (2007). *Statistical abstract* (126th Edition). Washington, DC: U. S. Department of Commerce.

U. S. Department of Education. (2000). Teacher Follow-up Survey ("Questionnaire for Current Teachers" and "Questionnaire for Former Teachers"), 2000-01, Table 6. Washington, DC: Department of Education, National Center for Educational Statistics (NCES).

U. S. Department of Education. (2003). NAEP 2002 year-at-a-glance. Washington, DC: National Center for Education Statistics, Office of Educational Research and Improvement.

Useem, E., & Neild, R. C. (2002). Teacher staffing in the school district of Philadelphia: A report to the community. Philadelphia, PA: Philadelphia Education Fund.

Van Ry, V. L. (2002). Exit survey of teachers in Kern County, California. A Project of The Center for the Future of Teaching and Learning.

Veenman, S. (1984). Perceived problems of beginning teachers. *Review of Educational Research, 54(2)*, 143-178.

Veenman, S., & Denessen, E. (2001). The coaching of teachers: Results of five training studies. *Educational Research and Evaluation, 7(4)*, 385-417.

Villar, A., & Strong, M. (2007). Is mentoring worth the money? A benefit-cost analysis and five-year rate of return of a comprehensive mentoring program for beginning teachers. *Journal of Research and Information, 25(3)*, 1-17.

Waller, W. W. (1932). *The sociology of teaching*. New York: John A. Wiley.

Watson, D. R. (2000). The Missouri teacher workforce: A model of turnover. *Dissertation Abstract International, 61A(09)*, 3433. (UMI No. AAT 9988712). Retrieved June 20, 2009, from Dissertations and Theses database.

Wayne, A. J. (2000). Teacher supply and demand: Surprises from primary research. *Education Policy Analysis Archives, 8(47)*, 1-8.

Weglinksky, H. (2002). How schools matter: The link between teacher classroom practices and student achievement performance. *Educational Policy Analysis Archives, 10(12)*.

Weld, J. (1998). Attracting and retaining high-quality professionals in science education. *Phi Delta Kappan, 79(7)*, 536-539.

Westling, D. L., & Whitten, T. M. (1996). Rural special education teachers' plans to continue or leave their teaching positions. *Exceptional Children, 62(4)*, 319-335.

Weston, S. (1997). Teacher shortage – supply and demand. *Technology Teacher, 57(1)*, 6-9.

What drives employee satisfaction. (2001). *Community Banker, 10(7)*, 42-43.

Whitehead, M. (2006, April 10). Increasing retention, warding off the cost of attrition. Retrieve June 24, 2009, from http://EzineArticles.com/?expert=Michelle_Whitehead.

Whitener, J. E. (1965). An actuarial approach to teacher turnover. Unpublished doctoral dissertation. Washington University, St. Louis, Missouri.

Whitener, S. D., Gruber, K., Lynch, H., Tingos, K., Perona, M., & Fondelier, S. (1997, May). *Characteristics of stayers, movers, and leavers: Results from the Teacher Followup Survey: 1994-95* (NCES 97-450). Washington, DC: National Center for Educational Statistics.

Wilkerson, C. (2000). Attrition of foreign language teachers: Workplace realities. *Foreign Language Annals, 33(1)*, 31-35.

Williams, R. C. (2005). Teacher attrition: A descriptive study of one school district's initiative to manage the problem. *Dissertation Abstract International, 67A(03)*, 809. (UMI No. AAT 3211645). Retrieved July 20, 2009, from Dissertations and Theses database.

Winning Workplaces. (n.d.) Classroom management. Retrieved December 15, 2008 from http://www.winningworkplaces.org/forum/ask/classroom_managementWyomingDepartmentofWorkforceServices .php.

Wise, A., Darling-Hammond, L., & Berry, B. (1987). *Effective teacher selection: From recruitment to retention*. Santa Monica, CA: Rand Corporation (No. R-3462-NIE/CSTP).

Wise, A. E., Darling-Hammond, L., & Berry, B. (1988). Selecting teachers: The best, the known, and the persistent. *Educational Leadership, 45(5)*, 82-85.

Wisniewski, L., & Gargiulo, R. M. (1997). *The Journal of Special Education, 31(3)*, 325-346.

Witham, G. (2007, January 8). Study examines unexpected costs of turnover. Retrieved July 17, 2009, from http://www.nxtbook.com/nxtbooks/hmm10807/index.php?startid=18.

Wyoming Department of Workforce Services. (n.d.) Employee turnover cost calculator. Retrieved January 3, 2009 from http://www.wyomingworkforce.org/resources/tools_turnover.aspx.

Yeagley, R. (2001). Data in your hands. *School Administrator, 58(4)*, 12-15.

Yee, S. (1990). *Careers in the classroom: When teaching is more than a job*. New York: Teachers College Press.

TULSA TURNOVER MODEL

SEPARATION COSTS
    Exit Interview
    Exit Survey
    Other Exit Procedures
    Administrative Tasks
        TOTAL

HIRING COSTS
    Advertising
    Recruiting
    Application Processing
    Interviews
    Reference Check
    Job Offer
    Criminal Background Check
    Drug Testing
    Stipends
    Bonuses
    Subsidies and Other Considerations
    Administrative Tasks
        TOTAL

TRAINING COSTS
    Orientation
    Mentoring
    Pre-Service New Teacher Training
    In-Service New Teacher Training
    Entry-Year Teacher Program
        TOTAL

PERFORMANCE PRODUCTIVITY
    1st Month's Salary @ 80%
    2nd Month's Salary @ 60%
    3rd Month's Salary @40%
    4th Month's Salary @20%
        TOTAL

TOTAL TEACHER TURNOVER COST

SEPARATION COSTS

Exit Interview
- Prepare
- Conduct
- Process
- Report

Exit Survey
- Prepare
- Conduct
- Process
- Report

Other Exit Procedures
- Prepare
- Conduct
- Process
- Report

Administrative Tasks
- Human Capital
- Payroll
- Benefits
- Information Systems
- Professional Development

PERFORMANCE PRODUCTIVITY
- 1st Month's Salary * 80%
- 2nd Month's Salary * 60%
- 3rd Month's Salary * 40%
- 4th Month's Salary * 20%

HIRING COSTS

Advertising
- **Newspaper**
  - Prepare
  - Publish
- **Website**
  - Prepare
  - Publish

Recruiting
- Outside Consultant
- Job Postings - Websites
- **Job Fair**
  - Organization
  - Presentation

Application Processing
- Mailed
- Online
- Matched to Jobs

Interviews
- Prepare
- Conduct
- Process
- Report

Reference Checks
- Check
- Address Issues
- Approve
- Determine Eligibility

Job Offers

Letter	Processing	
	Response	
Phone Call	Processing	
	Response	
Other	Processing	
	Response	

Criminal Background Check
- Check SBI
- Check NCIC
- Address Issues
- Approve
- Determine Eligibility

Drug Testing
- Set Up
- Address Issues
- Analyze
- Approve
- Determine Eligibility

Stipends
- Shortage
- Special
- Additional

Bonuses
- Signing
- Shortage
- Groups

Subsidies & Other Considerataions
- Relocation
- Housing
- Living
- Education

Administrative Tasks
- Human Capital
- Payroll
- Benefits
- Information Systems
- Professional Development

TRAINING COSTS

Orientation

District	Trainer
	Materials
School	Trainer
	Materials

Mentoring
- Mentor
- Substitute
- Materials

Pre-Service Training

District	Trainer
	Materials
Scnool	Trainer
	Materials
Department	Trainer
	Materials

In-Service Training

District	Trainer
	Materials
School	Trainer
	Materials
Department	Trainer
	Materials

Entry-Year Teacher Program
- Administrator
- Mentor
- Substitute
- Materials

Administrative Tasks
- Human Capital
- Payroll
- Benefits
- Information Systems
- Professional Development

APPENDIX B

UNIVERSITY OF OKLAHOMA IRB APPROVAL LETTER

The University of Oklahoma
OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

IRB Number: 12851
Approval Date: February 24, 2010

March 01, 2010

Edwyna Synar
Dept of Education

RE: An Examination of Teacher Turnover in Mid-Sized Urban School Districts

Dear Ms. Synar:

On behalf of the Institutional Review Board (IRB), I have reviewed and granted expedited approval of the above-referenced research study. This study meets the criteria for expedited approval category 7. It is my judgment as Chairperson of the IRB that the rights and welfare of individuals who may be asked to participate in this study will be respected; that the proposed research, including the process of obtaining informed consent, will be conducted in a manner consistent with the requirements of 45 CFR 46 as amended; and that the research involves no more than minimal risk to participants.

This letter documents approval to conduct the research as described:

Other   Dated: February 24, 2010 Recruitment Letter - Revised
Consent form - Subject   Dated: February 10, 2010 Revised
Other   Dated: February 09, 2010 Tulsa Public Schools Site Approval Letter
Other   Dated: February 06, 2010 Phone Script
IRB Application   Dated: February 04, 2010 Revised
Protocol   Dated: February 04, 2010 Revised
Survey Instrument   Dated: January 15, 2010 Interview Quest. Prof. Development
Survey Instrument   Dated: January 15, 2010 Interview Quest. For Information Systems
Survey Instrument   Dated: January 15, 2010 Interview Quest. Human Capital, Payroll, & Benefit
Other   Dated: January 15, 2010 Tulsa Public Schools IRB Application

As principal investigator of this protocol, it is your responsibility to make sure that this study is conducted as approved. Any modifications to the protocol or consent form, initiated by you or by the sponsor, will require prior approval, which you may request by completing a protocol modification form. All study records, including copies of signed consent forms, must be retained for three (3) years after termination of the study.

The approval granted expires on February 23, 2011. Should you wish to maintain this protocol in an active status beyond that date, you will need to provide the IRB with an IRB Application for Continuing Review (Progress Report) summarizing study results to date. The IRB will request an IRB Application for Continuing Review from you approximately two months before the anniversary date of your current approval.

If you have questions about these procedures, or need any additional assistance from the IRB, please call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

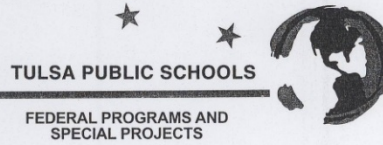E. Laurette Taylor, Ph.D.
Chair, Institutional Review Board

660 Parrington Oval, Suite 316, Norman, Oklahoma 73019-3085 PHONE: (405) 325-8110 FAX:(405) 325-2373

Ltr_Prot_Fappv_Exp

APPENDIX C

TULSA PUBLIC SCHOOLS RRB APPROVAL LETTER

TULSA PUBLIC SCHOOLS

FEDERAL PROGRAMS AND
SPECIAL PROJECTS

February 9, 2010

Dear Ms. Edwyna Synar:

Congratulations, your application to conduct research within Tulsa Public Schools has been approved. Your application requested approval to conduct interviews with department heads of Human Capital, Payroll, Benefits, Professional Development and Information Systems to determine what departments and personnel are responsible for the administrative tasks related to teacher turnover as specified in the Tulsa Turnover Model.

Such interviews are voluntary based upon the desire of the participant. This approval does not cover any student interviews, classroom observations, assessments either formal or informal, or review of individual student or staff information.

Your research approval within TPS is granted for 12 months commencing on January 15, 2010 through January 15, 2011.

Respectfully,

Taylor L. Young, Ph.D.
Interim Director of Portfolio Management
Program Management Office

TY/caw

cc: Terri Grissom
        Bill Naftzger
        Garry Potter
        Todd Lee
        Roberta Ellis
        Bob Burton
        Trish Williams
        Verna Ruffin

P.O. BOX 470208 · TULSA, OKLAHOMA 74147-0208 · (918) 746-6800