# THE RELATIONSHIP OF TEACHING EXPERIENCE AND STUDENT GAINS

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# The Relationship of Teaching Experience and Student Gains

A Field Study

Presented for the

Education Specialist

Degree

Austin Peay State University

Connie Fort Mayo

May 2002

ACKNOWLEDGEMENTS

The further I progress in life, the more I realize I owe everything to the generations of family who nurtured my curiosity, encouraged my love of books, and allowed me the freedom to explore life. A fourth generation teacher and learner, I thank them all.

Past generations of extended family who molded my early life are matched only by my two sons, Matthew and Adam. They make me want to be more. I thank them both.

However, without the soft-spoken expertise of Dr. Ann Harris, long-time friendship of Dr. Camille Holt, supportive mentorship of Dr. Penny Masden, research wisdom of Dr. Weiwu Zhang, and fearless faith of Dr. Ron Groseclose, I would not have experienced success in this endeavor. I thank each and every one.

ABSTRACT

The purpose of this study was to investigate the relationship between years of teaching experience and student achievement test gains in reading. School system test data were analyzed to compare value-added reading scores among groups of teachers with varying years of teaching experience.

Test data on 155 teachers were analyzed in the study of test results of a total of approximately 4000 student scores over three years. All teachers in the study were fully licensed and certified to teach and all had completed either a bachelor's or master's degree. All taught reading in grade four, five, six, seven, or eight.

Knowledge of the effect of years of teaching experience on student progress would be beneficial to school board members, system-wide personnel, and principals as they plan future hiring and teacher retention strategies. Results of this study suggest that the numbers of years of teaching experience of teachers in the school system studied were related to student gains. There was a strong correlation between low student gains and teachers with 0-2 years of experience. Students of teachers in the 3-14 years of experience category

demonstrated higher scale score gains than the other two groups.

Results of this study indicate there is a relationship between teaching experience and student achievement. Further study in the area of middle school reading and staffing for middle school reading is suggested.

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# CHAPTER I

# INTRODUCTION

## *Historical Perspective*

Accountability in education systems is a centuries old concept. England created a payment-by-results program in the eighteenth century. The purpose was to improve English education by paying teachers according to their students' performance on examinations (Wilms & Chapleau, 1999).

Today, as in eighteenth century England, most educational policymaking has its origin in either state or federal government. Secretaries of Education Bell, Bennett, and Riley maintained The "Wall Chart", comparing state level educational data, for many years. This chart was most likely the predecessor of Congress's 1990 reorganization and reauthorization of the National Assessment of Educational Progress (NAEP) allowing for comparisons of student achievement levels by state (Vinovskis, 1999). In turn, NAEP data provided statistical substance to education's current accountability concern.

State legislatures rushed to establish accountability plans, which addressed this national focus. By 2001, all 50 states had mandated testing programs. Each state established accountability departments or offices within their state education system, and implemented a method of reporting progress to the public (Goetz, Duffy, & LeFloch, 2001).

Tennessee is no exception. In 1992, the Tennessee General Assembly enacted the Education Improvement Act. This act set five performance standards for each school in the state. These addressed two academic standards and three non-academic standards. Academic standards are based on achievement and value-added test data. Non-academic standards focus on attendance rate, dropout rate, and promotion rate (State of Tennessee, 1996).

In order to obtain the necessary academic data, Tennessee's Education Improvement Act provided for the annual administration of an achievement test to all students in grades three through eight. The act requires that the specific test used for this assessment be bid for purchase every five years. The test currently in use is the TerraNova, published by CTBS/McGraw Hill. Results

of this test supply the state information for reporting school and system progress to the schools and the public.

Value-added, a concept which involves measuring annual student growth, was an addition to the Tennessee education vocabulary. The ultimate outcome of this student growth measurement is teacher accountability. All teachers in the state are expected to add a year's educational growth to students assigned to their classrooms.

Historically, one of the most common methods of gauging school success has been the comparison of achievement or percentile scores in order to determine if student scores exceeded or fell below nationwide norm gain scores. Tennessee legislators chose to continue this achievement comparison in addition to the value-added assessment score.

To analyze the data gathered from this annual assessment, members of the legislature selected Dr. William Sanders' model for test data interpretation. This model, the Tennessee Value-Added Assessment System (TVAAS) has become the guiding force for instructional decisions made in Tennessee school systems and individual schools since that date.

Sanders, Saxton, and Horn (1997) contend student achievement is not a valid measure by itself, because it allows students to remain at a fixed percentile score and make no growth toward improving that score. They maintain that students with high percentile scores (75 or above) can increase or add value to their scale scores, as can students with lower percentile scores (49 or below).

Sanders' TVAAS model is based on annual scale score gains and is used to compare student growth from one spring to the next. Test data are used to determine if individual students, or groups of students, made the same scale score gains as the national norm group. Students are expected to make 100% of the national norm gain in the areas of reading, language arts, math, science, and social studies in grades four through eight.

The premise of this model is that a student, or group of students, should make one year's progress, regardless of their beginning scores. For example, end-of-year fourth grade reading students are expected to have a scale score gain of 12 points over the preceding spring when they were tested as third graders. This is true whether they began with a scale score of 300 and progressed to 312, or they began with a scale score of

500 and progressed to 512. Either set of scores would equal one year of reading progress.

Reports promulgated by this value-added formula are the basis for data-driven goals required by both the Tennessee School Improvement Plans and the Southern Association of Colleges and Schools (SACS). In addition, the State Department of Education publishes annual school and school system report cards, which give each grade group at each school a grade in achievement (grades three through five and six through eight) and in value-added(grades four through five and six through eight). These grades are stated as an A, B, C, D, or F in each subject area. A value-added score of 100% earns a letter grade of C. As a major part of the annual report, all teachers in those grades receive a personal value-added report disclosing whether or not the students they taught the previous school year made a year's gain in each subject.

*Statement of the Problem*

A Tennessee school system, with system-wide and school achievement or percentile scores at-or-above the national average, has not met the expected 100% (of the

national norm) value-added scale score gain goal in all subjects and all grade levels. The system has adopted a standard-based and test-objective-driven curriculum, enhanced professional development, and increased expenditures for both technology and other innovative programs. These interventions have not provided the impetus needed to meet the 100% goal. During the 11-year data-gathering period, from 1990 through 2001, no school, grade level, nor subject area was consistently excellent, fair, or poor.

Because of the complexity of the education process, several variables must be examined in order to determine the potential cause for the wide variation in scores. These include: percent of students who qualify for free or reduced meals, ethnic diversity, textbook differences, local funding for instructional materials, classroom schedules, and teacher degree or certification. System-wide, all of these variables are equal, equitable, or comparable.

Another widely accepted variable is the classroom teacher. Many specific teacher characteristics create variance. Organizational skills, strategies, classroom environments, and years of experience differ greatly.

Novice teachers are assigned the same numbers of instructional objectives to teach the same numbers of students, in the same time frame as the more experienced teachers. The consistency of these expectations is in direct contrast to their level of preparation.

Thirty-five percent of this system's educators have taught fewer than three years in the system. The majority of these teachers are within the first three years of their profession. Does this large percentage of novice teachers have an effect on the value-added inconsistencies in this school system?

*Importance of the Problem*

The accountability torch was carried from the national level to the state, on to the local school systems, to the individual schools, and finally to the classroom teacher. As the final recipients of the torch, classroom teachers must structure instruction, foster achievement, and ensure gains for students in their charge. The individual classroom teacher is still the single most important piece in the entire education jigsaw puzzle.

However, if all teachers, schools, and systems are to be accountable to the same standards, more attention must be paid to the differences which make each of them unique. Of particular importance is the list of characteristics which separate expert teachers from others. Does experience, at some level, have a place on this list?

The purpose of this descriptive study is to investigate the relationship between years of teaching experience and student achievement test gains in reading. Reading was chosen as the subject area for the study because most academic areas display some dependence on success in this skill.

*Relationship of the Study to this Problem*

The push for accountability has forced the faculty of each Tennessee school into self-examination for strengths and weaknesses. In an otherwise successful school system, inability to meet the minimum goals in all academic areas and grade groups raises the question of the probable cause. A characteristic that is both obvious and disturbing to an administrator establishing a stable

team of educators is the high turnover rate, which contributes to a steady population of novice teachers.

This study of accumulated value-added data, based on scale score gain, will compare the student academic gains of novice teachers to those teachers with differing levels of experience. This knowledge would be beneficial to board members and system-wide personnel as they plan future hiring and teacher retention strategies.

*Research Questions*

Tennessee assessment data from 1999, 2000, and 2001 were collected and analyzed to determine if there is a disparity in reading achievement scores among students whose teachers have differing levels of experience, both within and without the system. The data will answer the following questions:

1) To what extent does the average percentage of national norm scale score gain in reading vary for students whose teachers have differing levels of experience, specifically 0-2 years, 3-14 years, and 15-30 years of teaching experience?

2) To what extent does the average percentage of national norm scale score gain in reading vary

for students whose teachers have various years of experience:

a) those who have 0-2 years experience

b) those who have 0-2 years of system experience, yet have had 3 or more years of teaching experience in another school system?

*Hypotheses*

*Hypothesis 1*:

There will be no significant differences in the average reading gains among students whose teachers have differing levels of experience.

*Hypothesis 2*:

There will be no significant differences in the average reading scale score gains between students whose teachers have zero-two years of experience in the system and those whose teachers have had three or more years of teaching experience in other school systems.

*Assumption*

The scale score gains reported to each teacher are assumed to be accurate representations of student scale

score gains as assessed by the TerraNova Achievement Test.

*Limitations*

The scope of this study is limited to full-time fourth through eighth grade reading teachers in the system, who earned a bachelor's degree from a state accredited teacher education program, are certified to teach in the grade they teach, and who taught for a full school year in 1999-2000, 2000-2001, or both.

*Definition of Terms*

1. Accountability: a systematic collection, analysis, and use of information to hold schools, educators, and others responsible for the performance of students and the education system. (Education Commission of the States, 1998.)
2. Scale Score Gain: The difference between a student's or group of students' scale scores on a norm referenced test from one year to the next
3. National Norm Gain: The mean scale score gain from one grade level to the next for the group of students used to norm a norm referenced test

4. Value-added Score: The scale score gain assigned to a teacher, grade group, or school which is based on a formula applied to actual scale score gain

*Summary*

Tennessee's mandate to use value-added data to improve the quality of education for Tennessee children hinges on local system use of the data provided. This study examined one teacher characteristic to determine if there is a relationship between years of experience and student gains in one system.

# CHAPTER II

## REVIEW OF RELATED LITERATURE

### *Introduction*

England's 1710 experiment in basing teacher pay on student scores in reading, writing, and arithmetic failed. This failure was due to the swift response of the schools to limit their curriculum to the measured basics, and to manufacture test results. Graduating students had mastered little of what was supposedly taught (Wilms & Chapleau, 1999). This early attempt at identifying and rewarding quality education was just one of dozens that dot the education history landscape.

Rapple (1994) documents Britain's second experiment in payment-by-results between 1862 and 1897. This system was short-lived because Her Majesty's inspectors were inconsistent and neglectful.

In 1969, Richard Nixon warned educators about the "avoidance of accountability" (Wilms & Chapleau, 1999, p.362) and the harm this could bring to the educational system. Almost immediately, the United States Department of Health, Education, and Welfare implemented a pilot

program in the Texarkana, Arkansas school district offering rewards for high scores. Texarkana officials, anxious to show they could close the gap between scores of black and white students, agreed to return federal funds if black students did not perform at a specified level. Successful students would be rewarded with transistor radios, green stamps, and rock music albums. Educators were eligible for financial rewards. However, this plan also crumbled into scandal and was abandoned when it was disclosed that the reported gains were inflated (Wilms & Chapleau, 1999).

Quality education remains an elusive variable, a construct of various indicators. In their efforts to identify and measure it, researchers have come to some level of agreement on many of the separate indicators. While the particularities of quality education are varied and difficult to define, many of the same characteristics appear in the work of several researchers.

On the national level, NAEP statistics have been disaggregated to examine teacher degree level, professional development, and course certification to explain score differentiations. On the state level, Alabama education officials began a program to study

novice teachers (Alabama State). The Texas Department of Education appointed a panel charged with investigating local budgets to ascertain what percent of funds were used for instruction (Texas Education). Tennessee legislators added class size and socio-economics to local accountability report cards (Tennessee Department). Local school boards in Tennessee feel the pressure to provide curricular support, mentors, and effective evaluation programs to identify teachers with expertise. In Tennessee, local systems strive to meet the legislative mandates for all classrooms to meet or exceed the national norm gains in all subjects in all grade levels (Sanders et al. 1997).

The following research study summaries involve (a) defining quality teaching or teacher expertise, (b) the impact of quality teaching, (c) comparing the novice teacher to the experienced teacher, and (d) comparing achievement of students of novice teachers to those of experienced teachers.

*Defining Teacher Quality*

Most of the studies which identify characteristics of teacher quality were conducted within the last 25

years and most were undertaken to study school resources. These resource studies naturally included teaching personnel, expenditures related to personnel, and the results of increased expenditures.

In 1996, Greenwald, Hedges and Laine undertook to ascertain the effect of school resources on student achievement. Their meta-analytical study of 60 primary research studies aggregated the data from these studies and determined that "a broad range of resources were positively related to student outcomes" (p.361). The 60 selected studies ranged over 30 years, with results which often agreed and just as often disagreed, conducted by such noted researchers as Coleman, 1966 and Hanushek, 1981, 1986, 1986, 1991 (as cited in Greenwald et al., 1996). During this process they identified teacher ability, teacher education, and teacher experience as quality indicators for use in determining if expenditures for these quality teachers resulted in increased student achievement.

Mayer, Mullens, and Moore (2001) also completed a meta-analysis of research on teacher effects for a report to the National Center for Education Statistics. They used the results to identify 13 indicators of school

quality. Mayer et al. classified these indicators into three categories of characteristics: teachers, classrooms, and schools. Under the heading of characteristics of quality teachers, they list academic skills, teaching assignments, teaching experience, and professional development. Likewise, Ferguson (1991) studied 900 Texas school districts and measured teacher expertise by scores on a licensing examination, master's degree, and experience.

Darling-Hammond (1997) conducted several teacher effect research studies in the mid 1990s. Her research focused on the quality of education in urban schools. She contended that one reason for poor student achievement in urban schools is the lack of experience in teachers assigned to those schools. Darling-Hammond named teacher expertise as one of the most important factors in determining student achievement, followed by the smaller, but generally positive, influences of smaller schools and small class size. She did not equate experience with expertise but maintained that it was an integral part of such.

A common denominator identified by all these researchers is that teaching experience is a factor when

determining teacher expertise. This study investigated the importance of teaching experience in its relationship to teacher expertise and its ultimate relationship to student achievement.

*Impact of Quality Teaching*

If quality teaching can be identified, it follows that the results of quality teaching can be measured. What do these measurements show? Several research studies have measured the impact of teacher quality with some consistency of outcomes. Conclusions are not always in perfect agreement on every indicator, but most agree that teacher expertise or teacher quality is a strong determinant of student learning.

A review of the literature on teacher effect must include the work of E.A. Hanushek. For at least 21 years, Hanushek published a vast array of studies comparing resources to student achievement. These resources included teacher experience and education because, historically, teacher salaries have been tied to these two characteristics. On the whole, he found no consistent or positive relationship to school spending and student

achievement (Hanushek, 1996). While Hanushek did find some positive correlation between teacher experience and student performance, he attributed that correlation to the more experienced teachers selecting teaching assignments in higher socio-economic schools (Hanushek, 1993). His findings have been widely accepted in academic, legal, and public policy arenas.

Greenwald et al. (1996) questioned the methodology used by Hanushek and reexamined his data in their meta-analysis. At the conclusion of their study, they determined that "...the data he assessed on the relations between school resource inputs and student outcomes, including achievement, were substantially more consistent and positive than he believed" (p.362). They found significant positive correlation between input and outcome. This input includes the funding of experienced teachers with advanced degrees.

Ferguson (1991) also found that better teachers tend to move to more affluent school districts, thereby making it difficult to determine whether the affluence of the community, or the expertise of the teacher created the high scores. However, he verified the importance of experience in quality teaching by concluding that

retaining experienced teachers and hiring more teachers with advanced education levels produce higher test scores.

In 2000, Darling-Hammond completed a study using data from a 50-state survey of policies, state case study analyses, the 1993-94 Schools and Staffing Surveys, and NAEP, to examine "ways in which teacher qualifications and other school inputs are related to student achievement across states" (p.38). Her results showed that the quality of the teaching force was more strongly related to student outcomes, than were student demographics. She also found that teacher quality, as a predictor of student success, outweighed class size, curricular content, testing, overall spending levels, or teacher salaries.

Based on these findings, Darling-Hammond advised state officials to concentrate on the "preparation and qualifications of teachers they hire and retain" (p.39). Preparation, qualifications, and retention are all mentioned in the definitions of teacher quality summarized in the previous section.

Other researchers have found a correlation between teacher experience and student learning. However, the

results vary in degree of significance; Murnane and Phillips (1981) concluded that teachers with fewer than three years of experience were less effective. They also advocated using teacher characteristics and student progress as measures of effectiveness, rather than level of achievement. This idea resurfaced in the Sanders TVAAS Model (Sanders & Rivers, 1996). Rosenholtz (1986) found inexperienced teachers to be less effective, although he found this difference to stabilize after five years. Of special importance is that by 1998, Hanushek had adopted a similar stance when he concluded "…differences in teacher quality would swamp all other inputs…these differences in teacher quality explain at least 7.5% of the total variation in measured achievement gains, and probably much more"(Hanushek et al. 1998, p.30).

Choy and Gifford (1980) studied years of experience with a slightly different view. They related it to the stability of a school. Their conclusion was that an experienced faculty led to school stability, impacting quality education, and leading to increased achievement.

Darling-Hammond's 1995 study concluded that teachers with more education and more teaching experience were more effective in the classroom. Okpala (2000) also used

education and experience as quality indicators in her study of fourth grade students in 42 North Carolina public schools. She studied the link between school, teacher, and family demographic characteristics to reading and mathematic achievement scores. The study used teacher education and experience as the two teacher variables under scrutiny. Okpala (2000) discovered that the percentage of teachers with ten years of teaching experience correlated with reading scores of students at a significance level of 5%.

Darling-Hammond's (1995) and Okpala's (2000) use of education level and experience together as variables is significant because they are a frequent pairing in research. One possibility for this combination surfaces in the 1999 *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers*. Researchers for the National Center for Education Statistics found that only 16% of teachers with three or fewer years of experience held a master's degree. On the other hand, teachers with 4 to 20 or more years experience showed a master's degree percentage that climbed from 31% to 62%. This is an expected finding. Few novice teachers have had time or finances to pursue a further degree

William Sanders, creator of the Sanders TVAAS Model, has probably been involved in more in-depth studies of the Tennessee test data than any other researcher. During the past ten years, he has developed a longitudinal picture of every student, teacher, and school in the state. His books and journal articles, while addressing several aspects and findings of his studies, always mention one finding, which is repeated often and emphatically in his works. He claims that within grade levels, the single most dominant factor affecting student academic gain is teacher effect (Sanders & Rivers, 1996; Wright, Horn & Sanders, 1997).

Sanders also maintains that students, or groups of students, who are comparable in ability and achievement levels may have greatly varying academic outcomes merely because of their classroom placement or teacher sequence. Sanders and Rivers (1996) contend that teacher effects:

> …are both additive and cumulative with little evidence of compensatory effects of more effective teachers in later grades. The residual effects of both very effective and ineffective teachers were measurable two years later, regardless of the effectiveness of teachers in later grades (p.7).

This "additive and cumulative" effect is the most noteworthy aspect of the differences between effective and ineffective teachers and the factor that demands further study in this area. If this is true, as their research shows, and if there is a difference in the effectiveness of novice and experienced teachers, then selected school systems have an almost insurmountable task in reaching and maintaining the 100% value-added goal.

*Comparing the Novice to the Experienced Teacher*

The reviewed literature, with few exceptions, identifies experience as one characteristic of a quality teacher. The next step is the comparison of skills, knowledge, and strategies of novice teachers and experienced teachers. Most of the research in this area is more qualitative than quantitative. In nearly every instance the studies are anecdotal in nature and based on observations.

Darling-Hammond (1995) found novice teachers still trying to master a wide range of skills including motivating students, assessing progress, meeting the special needs of a large population of students, and

managing student behavior. She termed them less effective than their more experienced counterparts.

O'Connor and Fish (1998) studied 35 classroom teachers, observing their skills in cohesion, communication and flexibility. Expert teachers had significantly higher levels of flexibility and a higher level of communication than the novice teachers in this study.

A smaller study with five student teachers and their five cooperating teachers (Westerman, 1991) also compared flexibility levels between these two groups. They found the expert teachers considered the perspective of the student when planning and adapted to the needs of students more during instruction. Novice teachers, in contrast, were more structured in their planning and made few adaptations during teaching.

Another study with similar results is that of Manning and Payne (1996). They compared the mental deliberations of first-year teachers during 10 lessons with those of more experienced teachers during the same lessons. They found the novice teachers to be more judgmental, non-facilitative, and self-directed.

More recently, in 2000, Allen and Casbergue interviewed both novice and more experienced teachers after class sessions. They found the recall of the expert teacher to be more thorough and accurate regarding specific behaviors of both teacher and students.

*Comparing Student Achievement*

In their report to the Texas State Board for Educator Certification, the Panel on Novice Teacher Induction Support System asked readers to think how they might react to being told their children had been selected to be placed only in the classrooms of novice teachers for their entire K-12 career. Dr. Leslie Huling, panel chair, pointed out that both educators and parents know intuitively that teaching effectiveness improves with teaching experience (Texas State Board, 1998).

Dr. Huling's intuitive statement was supported by the 1998 Panel report which included a study of one urban Texas district comparing Texas Assessment of Academic Skills (TAAS) student pass rates of first-year teachers with those of teachers with five years or more of experience. The study found a significant difference in

favor of the experienced teachers. In fact, experience accounted for more variance than teacher ethnicity, gender, or education level.

Several researchers have been successful in connecting teacher experience to student achievement. Among these are Mayer et al. (2001) who concluded, "Students, on average, learn more from teachers with three or more years of teaching experience than they do from teachers with less experience" (p.7). Murnane and Phillips (1981) also concluded that teachers with fewer than three years of teaching experience tend to be less effective than more experienced teachers.

Greenwald et al. (1996) whose meta-analysis is the most comprehensive of the last quarter century examined a broad range of school resources in comparison to student outcomes. They determined that many school inputs were positively related to student outcomes. Their study concluded that the magnitude of the effects is enough to justify moderate spending increases to produce "significant student achievement increase" (p.36). One finding of this study specifically addressed teacher experience "One would expect comparable and substantial increases in achievement if resources were targeted to

selecting (or retaining) more educated or more experienced teachers" (p.380).

Using measured scores on a licensing examination, master's degree, and experience, Ferguson (1991) found that teacher expertise accounted for about 40% of the variation in students' reading and math achievement in Texas. His findings about the importance of teacher expertise were in keeping with those of Wenglinsky (2000). Wenglinsky compared the impact of quality or classroom practices, to that of class size and found quality instruction to have an impact 7 to 10 times greater than class size.

*Summary*

The research summarized in this chapter highlights the need for quality before accountability. Local school systems must have a quality teaching force in place before they can meet the accountability mandates set forth by the state legislature

Just as the majority of teacher quality research has its roots in school resources research, so does accountability grow from cost-accounting. Comparing the output efficiency of a school system, school, or teacher

is a complex idea with a myriad of possibilities, with a difficult-to-define variable of teacher expertise near the center.

# CHAPTER III

## METHODOLOGY

### *Subjects*

The school system used in the study was selected because of its failure to consistently meet the value-added standards set by the Tennessee legislature. The subjects of this study included all fourth through eighth grade reading teachers in the school system who met these qualifications:

a) Taught reading in the school system in either 1999-2000, 2000-2001, or both of these years

b) Are licensed by the state of Tennessee and appropriately endorsed to teach reading in grades four through eight

c) Taught for the full school year excluding the sick leave, personal, or professional days provided by Tennessee law

*Procedures*

Application was made to the Austin Peay State University's Institutional Review Board (See Appendix A) and the system director of schools (See Appendix B) for project approval. Permission was granted by both entities to conduct the study. Approval of the proposal was requested and received from The Graduate School at Austin Peay State University.

A master list of all teachers meeting the qualifications for the study was compiled using system personnel records. This list was disaggregated by years of teaching experience in accordance with the criteria outlined in the research questions (0-2 years experience, 3-14 years experience, 14-30 years experience, teachers with 0-2 years of system experience and teaching experience elsewhere). The end product of this disaggregation was a four-part list of teachers with differing years of teaching experience.

System test data were examined for each teacher on each list. The average scale score gain for each teacher was obtained from the sub-test report generated by Clarity software. Clarity is a test-score management system published by CTS-McGraw Hill. The sub-test report

provides scores for students by classroom for the current year and compares each student's score to their score for the previous year. It also gives the average scale score gain for the classroom.

The average reading gain for the year was recorded on a separate list for that particular years-of-experience classification. This list did not contain teacher names. The product of this process was a four-part master list showing only a column of scale score gains.

Next, each teacher's average scale score gain was weighted according to how many students were in the classroom in order to obtain an accurate mean score for all teachers in each category.

Finally, each category of teachers was averaged to find the mean scale score gain for each group of educators. This final calculation was used to determine if there was a relationship between the number of years of teaching experience and scale score gains.

At no time during this process, or after its completion was any personally identifiable information for student, teacher, or school produced. Student, teacher, and school confidentiality was protected at all times.

# CHAPTER IV

## PRESENTATION OF DATA

In this chapter the findings of the study as they relate to the null hypotheses will be presented.

*Hypothesis 1*:

There will be no significant difference in the average reading gains among students whose teachers have differing levels of experience.

Table 1 shows the national norm scale score gain in reading for students by teacher experience categories. Teacher experience was divided into three categories, specifically 0-2 years, 3-14 years, and 15-32 years. Teaching experience was based on calculations made the first month of the school year.

Table 1

Mean Reading Scale Score Gain for Teachers with Varying Levels of Experience

| Teaching Experience | Norm Scale Score Gain |
|---|---|
| 0-2 Years | 9.6 |
| 3-14 Years | 11.7 |
| 15-32 Years | 10.7 |

Because the national norms vary for each grade level, the data in Table 1 were difficult to interpret. A gain of 9.6 at the eighth grade level exceeded the standard, while a 9.6 gain at the fifth grade level was below the standard. Therefore, the data were disaggregated by grade level, still using the three experience categories. Further disaggregation of the scores clarified the requirements for each grade level. This gave a more accurate picture of the national norm gain compared to the actual mean gain.

The national norm gain for fourth grade reading is 12 scale scores. Table 2 shows the mean scale score gain for students in the fourth grade disaggregated by the experience level of their teacher.

Table 2

Fourth Grade Mean Reading Scale Score Gain

| Teaching Experience | Mean Scale Score Gain | National Scale Score Norm Gain |
|---|---|---|
| 0-2 Years | 9.9 | 12 |
| 3-14 Years | 13.8 | 12 |
| 15-32 Years | 14.3 | 12 |

Of special importance is the fact that 35% of the fourth grade students were in classrooms of teachers in the 0-2 years experience category, while only 9% were taught by teachers with 15-32 years of experience, where students made the highest gains (Table 2). The system-wide fourth grade reading gain in 2001 was 13.4 scale scores. It appears that large percentages of fourth grade students taught by teachers in the 3-14 year category were influential in this gain. Figure 1 illustrates the percentage of students served by teachers in each experience category.

Figure 1

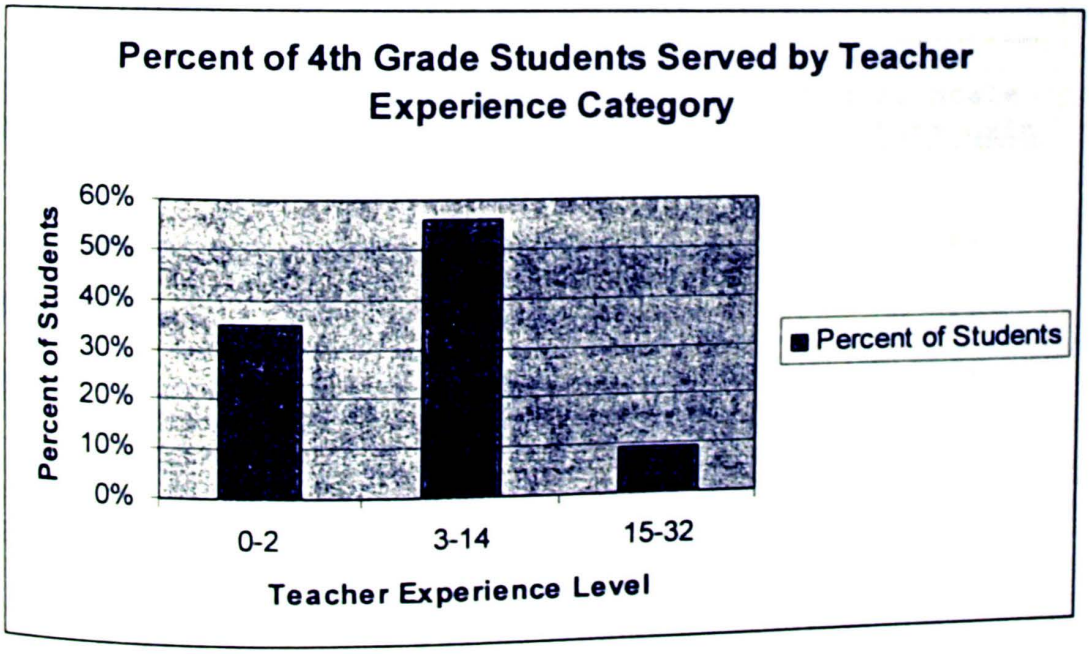


Table 3 illustrates the evident disparity in fifth grade reading scores. The Tennessee standard for fifth grade students is a 13 point scale score gain. Only 26% of the system's fifth grade students were served by teachers in the 3-14 year category, where the highest gains were attained, while 50% were taught by teachers in the 0-2 year category where they failed to meet the state standard. Students in classrooms with teachers in the 3-14 year category made over 150% of the gains made by students in the 0-2 year category.

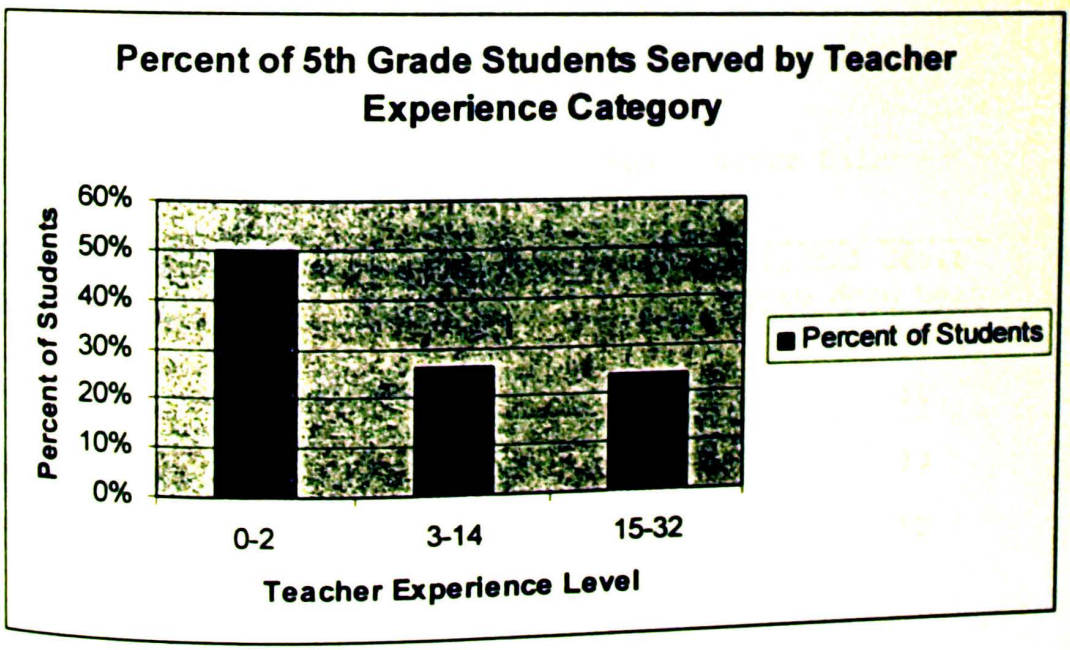
Table 3

Fifth Grade Mean Reading Scale Score Gain

| Teaching Experience | Mean Scale Score Gain | National Scale Score Norm Gain |
|---|---|---|
| 0-2 Years | 12.1 | 13 |
| 3-14 Years | 19.5 | 13 |
| 15-32 Years | 13.5 | 13 |

Figure 2 depicts the large percentage of students in the classrooms where the expected gains were not realized. Fifty percent of the fifth grade students were served by teachers with 0-2 years experience. Students in this group failed to make the norm gain. Only 26% of the sixth grade students were taught by teachers in the 3-14 year category, where gains of 19.5 scale scores were attained (Table 3). Fifth grade is a vitally important transitional year in this system. Students transition from fourth grade in elementary schools to fifth grade in middle schools.

Figure 2



Sixth grade does not follow the same pattern as all other grades studied. While none of the three experience categories meet the national norm, the 0-2 year group came nearer to the goal than either of the other two groups. Although the differences in scale score gains for sixth grade are not as pronounced, the seemingly small differences had a significant effect on system scores. The large percentage of students in the 3-14 year group greatly affected system scores. Table 4 illustrates the especially low gains for the 15-32 year experience category. There was a greater number of the 15-32 year group teaching sixth grade than any other grade in the study. Therefore, this low gain is of greater relevance.

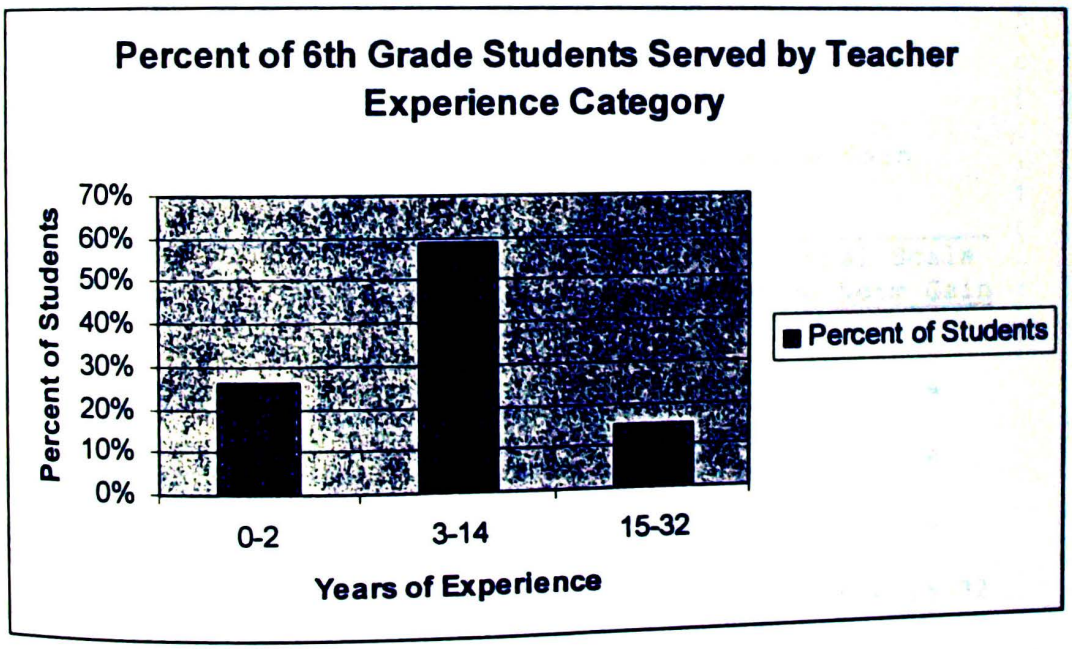
**Table 4**

Sixth Grade Mean Reading Scale Score Gain

| Teaching Experience | Mean Scale Score Gain | National Scale Score Norm Gain |
|---|---|---|
| 0-2 Years | 8.1 | 10 |
| 3-14 Years | 6.6 | 10 |
| 15-32 Years | 3.5 | 10 |

Figure 3 illustrates the percentage of 6th grade students in each experience category. There are virtually no positive areas in this figure. In addition to all groups failing to meet or exceed the national norm scale score gain, a majority of students were in the lowest gain group (0-2 years, Table 4). As noted earlier, sixth grade results are not similar to the other four grades studied.

Figure 3



Seventh grade results were similar to grades four, five, and eight. However, the disparity between experience groups in this grade was not as great as in the other three. While neither experience category group met the expectation, students taught by the 3-14 year experience group came nearest meeting the goal. Again in the seventh grade, students who were taught by teachers with more teaching experience made greater gains. Table 5 illustrates the difference between the categories of 0-2 and 3-14 years experience.

Table 5

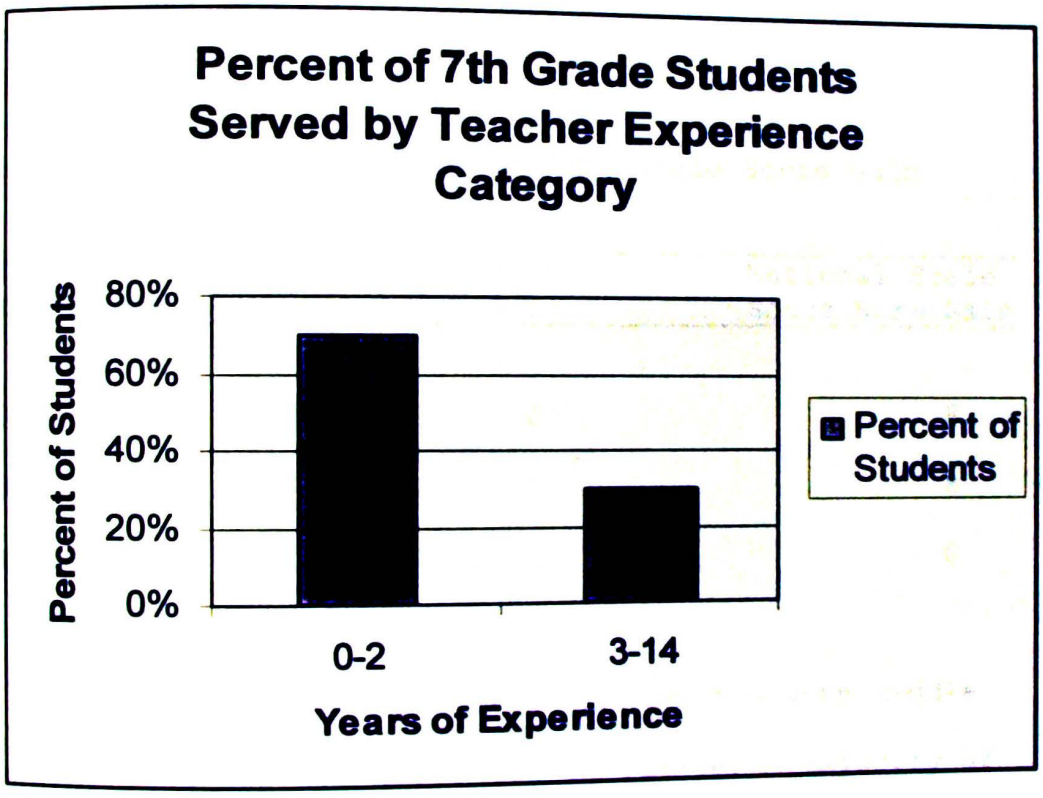
Seventh Grade Mean Reading Scale Score Gain

| Teaching Experience | Mean Scale Score Gain | National Scale Score Norm Gain |
|---|---|---|
| 0-2 Years | 7.9 | 9 |
| 3-14 Years | 8.4 | 9 |
| 15-32 Years | NA | 9 |

Note. There were no seventh grade teachers in the 15-32 years of experience category.

Figure 4 shows the percentage of 7th grade students in each experience category. Once again, the greater number of students was in the classrooms with 0-2 years experience, and lower scale score gains.

Figure 4




Note. There were no seventh grade teachers in the 15-32 years of experience category.

Grade eight has the lowest national norm gain of any of the five tested grades. The gain disparity was more visible here than in any other grade. Table 6 illustrates the vast difference between the categories of 0-2 and the other two experience categories.

Table 6

Eighth Grade Mean Reading Scale Score Gain

| Teaching Experience | Mean Scale Score Gain | National Scale Score Norm Gain |
|---|---|---|
| 0-2 Years | 1.0 | 8 |
| 3-14 Years | 13.9 | 8 |
| 15-32 Years | 13.5 | 8 |

Teachers with an interest in working with middle school students are difficult to locate. A majority of the applications on file in this school system are for lower elementary grades.

Fewer applicants request middle school and those who accept the assignment seem to do so because they cannot obtain a lower grade position. Middle school positions

are often the last ones filled in the fall. It appears that many who accept the assignment have not prepared to teach middle school reading, and leave the middle grades once they secure a lower grade position, creating high turnover, and staff instability. Figure 5 illustrates that over 50% of the students are taught reading by teachers with 0-2 years of teaching experience.

An analysis of the seventh and eighth grade curricula reveals that English grammar and literature are the focus of the language arts classes at two of the three middle schools. Reading instruction is secondary to language skills. This emphasis on literature and grammar, rather than reading, may affect gains.

Figure 5

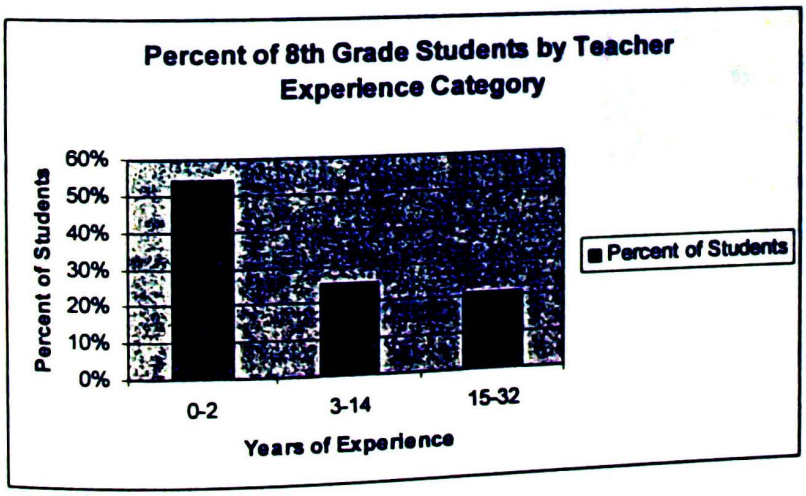


Figure 6 provides an overall illustration of the percentages of students served by each teacher experience category and shows the importance of determining the relationship between teaching experience and student gains. In this study, 43% of the students are served by teachers in the 0-2 years experience category.

Figure 6

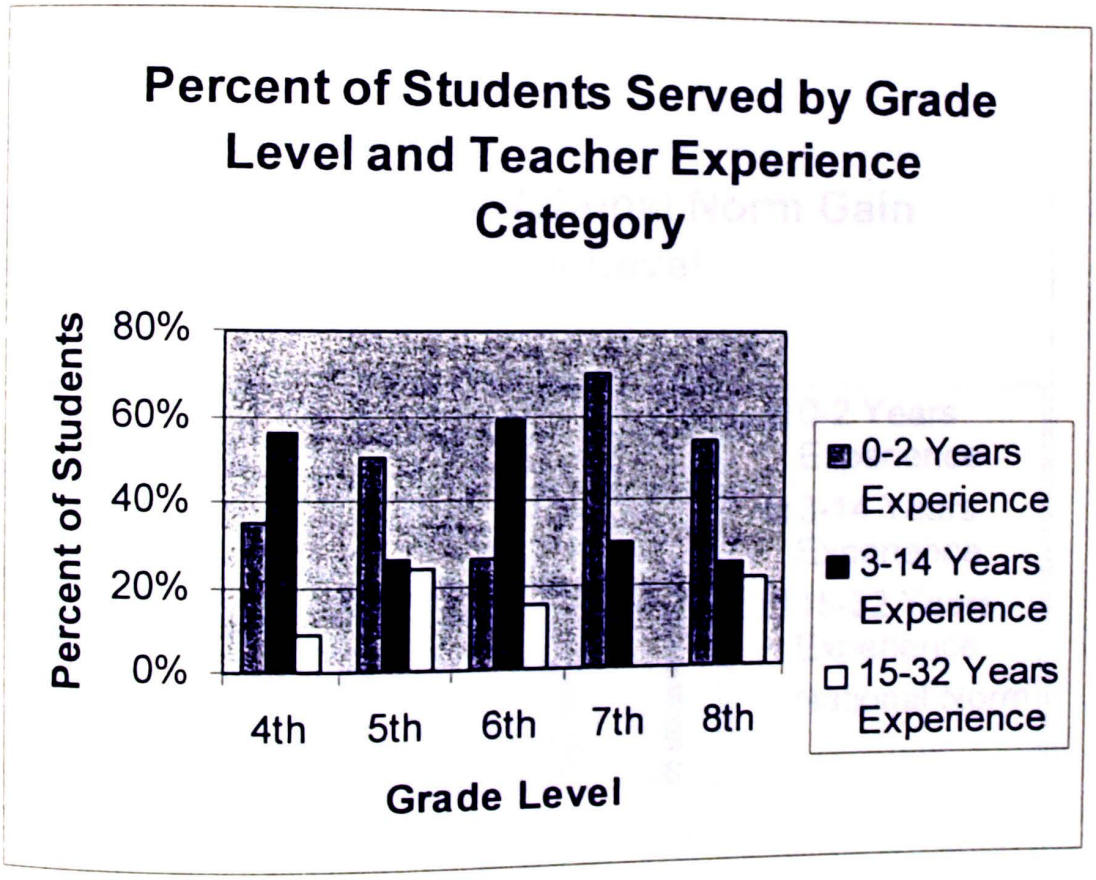
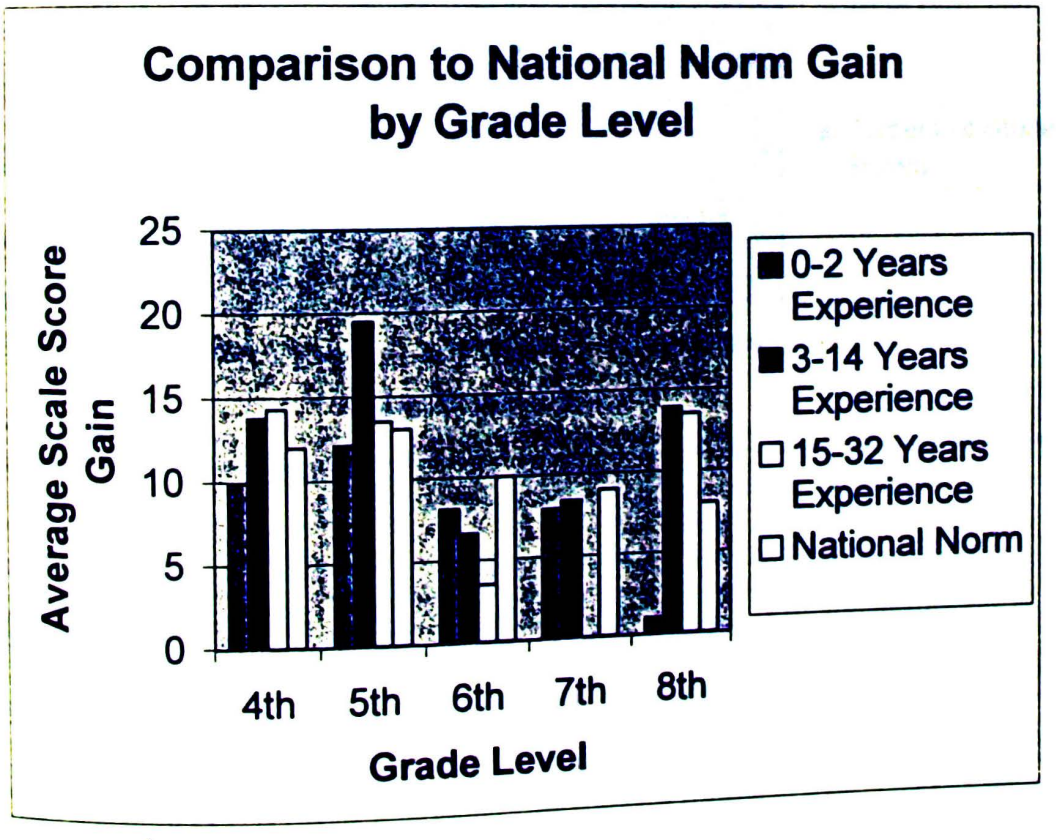


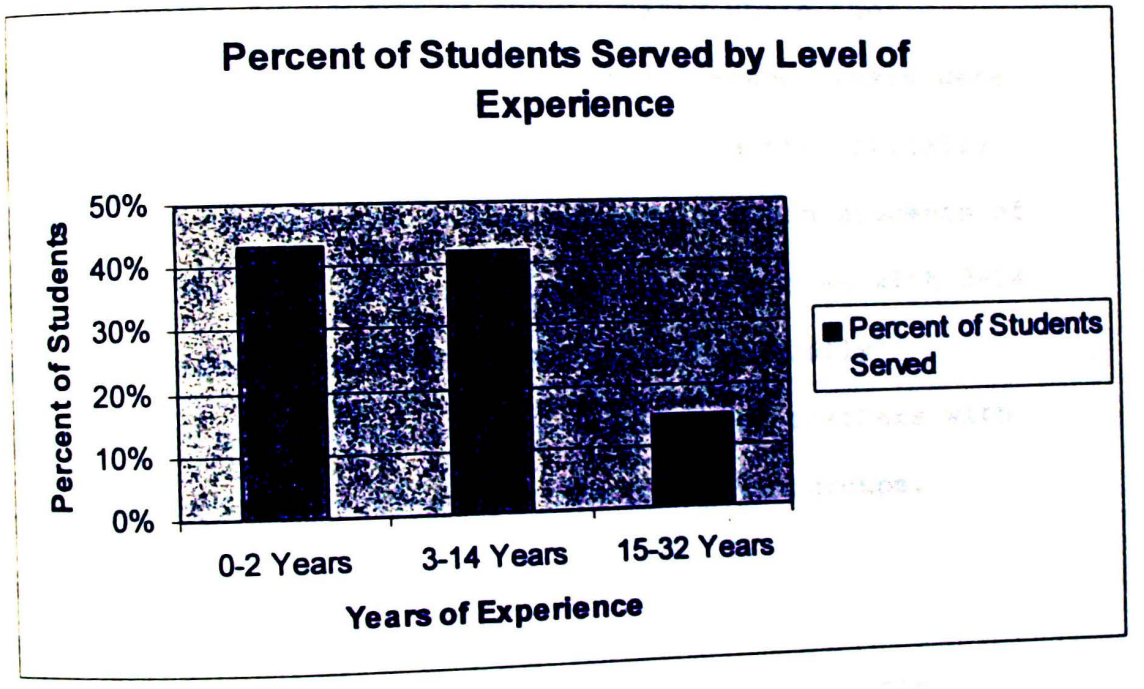
Figure 7 shows the average scale score gain by grade level and by experience categories compared to the national norm gain. At no grade level do the students taught by teachers in the 0-2 year category meet the state expectation of the national norm gain. In every grade level except sixth grade, the students taught by teachers in the 3-14 years experience group were near or above the state goal.

Figure 7



The significance of the low gains by students in all grade levels taught by the 0-2 years experience category is highlighted by Figure 8 which illustrates that over 40% of students in the system are taught by teachers in the 0-2 years of experience category.

Figure 8



A One-Way ANOVA was conducted on the scale score gain data for all students. The alpha for this test was set at $p < 0.01$. This resulted in the rejection of the null hypothesis because the statistic calculation was $p < .0001$. The conclusion is that the difference in years teaching experience does make a difference in student performance gain on the TerraNova.

In order to determine specifically where the difference is, Fisher's PLSD and Tukey/Kramer tests were performed at $p < .01$. Both tests showed a statistically significant difference in performance between students of teachers with 0-2 years of experience and those with 3-14 years of experience. There was no statistically significant difference between students of teachers with 15-32 years of experience and the other two groups.

*Hypothesis 2*:

There will be no significant difference in the average reading scale score gains between students whose teachers have zero-two years of experience in the system and those whose teachers have had three or more years of teaching experience in other school systems.

Table 7 shows the mean national scale score gain in reading for students whose teachers have differing levels of experience outside the system. While this appears to be a significant difference, it must be noted that there were only ten teachers included in the group with three or more years of experience in another system. Further confounding the model was the fact that the experience level of this group of teachers varied greatly. This sample is too small to be statistically measured and would present a spurious relationship.

Table 7

Mean Reading Scale Score Gain Comparing Teachers With Out-of-System Teaching Experience

| Teaching Experience | Mean Scale Score Gain |
|---|---|
| 0-2 Years in system | 9.6 |
| 0-2 Years in system with 3 or more years in another system | 7.2 |

# CHAPTER V

## SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this descriptive study was to investigate the relationship between years of teaching experience and student achievement test gains in reading. Reading was chosen as the subject area for the study because most academic areas display some dependence on success in this skill.

Three years of data from the TerraNova Achievement Test, a part of the Tennessee Comprehensive Assessment Program were disaggregated using Clarity Software. This disaggregation was by grade level and then by teacher. Scale score information promulgated by this process was then charted by teacher. Teachers were grouped according to years of experience. The data were analyzed to determine the relationship between teacher experience and student scale score gains.

Findings from this study resulted in a rejection of the null hypothesis that there would be no significant difference in the average reading gains among students whose teachers have differing levels of experience.

A significant difference was found when all grades were combined and in grades four, five, seven, and eight, when analyzed separately. It was evident that teachers in the 3-14 years experience category had higher overall gains than teachers in the other two categories. In grades four, five, and eight, students in classrooms with teachers in the 3-14 year experience teachers met or exceeded the state goal.

Students of teachers in the 0-2 year range had appreciably lower gains. In no grade level did the students who were taught by teachers in the 0-2 year experience category meet the state goal. The great percentage of students served by these teachers further magnifies the problem.

In the fourth and fifth grades, students of the 15-30 year teachers met or exceeded the state expectations. In the sixth grade, students served by teachers in this category fell far below the state goal. There were no teachers in the category teaching reading in seventh and eighth grade. Numbers of teachers in the 15-30 year category were fewer in number than in the other two categories, making the data sample narrower.

Data from this study were inconclusive in the null hypothesis that there would be no significant difference in the average reading scale score gains between students whose teachers have 0-2 years of experience in the system and those whose teachers have had three or more years of teaching experience in other school systems. The available sample was not large enough to be statistically significant.

In conclusion, results of this study are similar in findings to those cited in the literature review. Evidence indicates there is a relationship between teaching experience and student achievement.

Much of the research on this subject has focused on the comparison of the experience level in high and low socio-economic communities. There are implications in the findings of this study that further research needs to focus on the quality of teachers at the middle school level. The scarcity of teachers seeking these positions may be a contributing factor in the disparity in student gains. Further research in this area would be helpful in clarifying the cause or causes of the disparity. Another possible topic to be explored is the place of formal reading instruction in the middle school program.

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# APPENDIXES

# APPENDIX A
## Letter of Consent (APSU)

# Austin Peay State University
# Institutional Review Board

November 13, 2001

Connie Mayo
c/o Ann Harris
Education Dept.
APSU Box 4545

RE: Your application dated November 13, 2001 regarding study number 02-024: The Relationship of Teaching Experience and Student Achievement Gains (Austin Peay State University)

Dear Ms. Mayo:

Thank you for your recent submission. We appreciate your cooperation with the human research review process. I have reviewed your request for expedited approval of the new study listed above. This type of study qualifies for expedited review under FDA and NIH (Office for Protection from Research Risks) regulations.

Congratulations! This is to confirm that I have approved your application through one calendar year. Signed written consent is not required. This approval is subject to APSU Policies and Procedures governing human subjects research. These policies can be viewed at: www2.apsu.edu/www/computer/policy/2002.htm. The full IRB will still review this protocol and reserves the right to withdraw expedited approval if unresolved issues are raised during their review.

You are granted permission to conduct your study as described in your application effective immediately. The study is subject to continuing review on or before November 13, 2002, unless closed before that date. Enclosed please find the forms to report when your study has been completed and to request an annual review of a continuing study. Please submit the appropriate form prior to November 13, 2002.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. Contact Lou Beasley (221-6380; fax 221-7595; email: beasleyl@apsu.edu) if you have any questions or require further information.

Again, thank you for your cooperation with the APIRB and the human research review process. Best wishes for a successful study!

Sincerely,

Lou M. Beasley

Dr. Lou M. Beasley
Chair, Austin Peay Institutional Review Board

# APPENDIX B
Letter of Consent (CCSS)

CHEATHAM COUNTY
Board of Education
102 Elizabeth Street
Ashland City, Tennessee 37015

Director
M. Bruce Gibbs
Phone (615) 792-5664
Fax: (615) 792-2551

Ms. Connie Fort Mayo
1037 Dorris Winters Road
Chapmansboro, TN 37035

Dear Ms. Mayo,

Your research project titled "The Relationship of Teaching Experience and Student Gains" has been approved. The date of the approval was November 6, 2001.

Now that you have approval, you may proceed with your analysis of system data. If you have questions, please call my office at 615-792-5664.

Sincerely,

M. Bruce Gibbs
Director

# APPENDIX C
## Approval of Proposal

**APPROVAL OF PROPOSED**

_____ Research Paper

_____ Thesis

_X_ Field Study

THE GRADUATE SCHOOL

I am submitting herewith a proposal by Connie Fort Mayo 412-78-6460
(name of student) (SS#)

appropriate to the pursuance of Education, 6990
(department) (course number)

I (we) recommend that it be approved.

Ann Harris
Chairperson-Director

2-7-02
Date

We have read and approved this proposal:*

Second Committee Member

Approved by IRB
on 11/13/01 Parrie R. Watte

P. Mosden
Third Committee Member

Approved by COGS
on 03/08/02 Parrie R. Watte

*Signatures are required for Theses and Field Studies ONLY.

THIS FORM, WITH AN ATTACHED PRECIS OF THE APPROVED PROPOSAL, SHOULD BE FILED IN THE OFFICE OF THE DEAN OF THE GRADUATE SCHOOL BEFORE THE STUDENT REGISTERS FOR RESEARCH PAPER, THESIS, OR FIELD STUDY.)

# VITA

Connie Lynn Fort Mayo was born November 4, 1947 in Robertson County, Tennessee; a resident of Cheatham County Tennessee. She received a Bachelor's Degree in Elementary Education and a concentration in Library Science from Austin Peay State University with the class of 1969.

The following ten years were spent teaching in the Cheatham County School System and completing her Master's Degree in Administration and Supervision from Austin Peay State University. During this time, she gained experience in several grade levels, as well as school librarian.

In 1978 Connie moved to West Tennessee and taught other grades with the McNairy County School System before moving back to Cheatham County.

Upon her return to Cheatham County, she accepted a supervisory position with the system and has served in various supervisory roles there since 1980. She is an active participant, board member, and officer in several state and district leadership organizations. Connie entered the Educational Specialist program at Austin Peay State University in January of 2001.