CRITICAL FACTORS IN SUCCESSFUL

TEXAS MIDDLE SCHOOLS:

1993-1995

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CRITICAL FACTORS IN SUCCESSFUL TEXAS MIDDLE SCHOOLS: 1993-1995

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An examination of the characteristics of Texas middle schools has been conducted with the objective of developing a planning tool for middle staffs. This success is measured by the Academic Excellence Indicator System (AEIS), whose rating scale has three components: campus scores on the Texas Assessment of Basic Skills (TAAS), campus attendance percentages, and campus dropout rates. TAAS scores and attendance rates have been the focus of this study.

The Public Education Information Management System (PEIMS) is charged with the responsibility of gathering the information on all Texas campuses, including middle schools. These data, along with a campus rating of exemplary, recognized, acceptable, or low performing, are published in a campus report card and distributed to the schools, the public, and the media.

Many studies have been cited on individual campus characteristics, or indicators. However, a comprehensive search of the literature resulted in only a few studies of school report cards. Most of these were done on a district level; however, some parallels may be drawn between these studies and the present study. Teacher tenure and attendance were found to be clearly positive influences. Demographics, retention, and mobility were seen by the majority as negative influences.

The two years of data were examined separately for each research question. Principal component analysis reduced the number of indicators in both years' data to 20 factors. Each of these factors received a designation based on the characteristic that the

component indicators had in common. A multiple regression analysis was performed on these factors to determine the influence each had on the campus TAAS scores and attendance.

The unpredictability of human subjects requires an additional step in this study to achieve valid conclusions. A comparison of the two years' results is made to discover attendance, gifted and talented programs, and teacher gender were the strongest overall positive influences on student achievement. Campus demographics, retention, and ESL/bilingual programs have the strongest association with low student achievement.

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INTRODUCTION

History

At one time, Texas schools were evaluated to verify that the few state rules were being observed. After the Foundation School Program was established in 1949, state monies provided the bulk of funds that supported the schools, and local property taxes supplied the remainder of the revenue. Two events caused Americans to call for reform of the schools. The Russians launched the first artificial satellite, Sputnik, and then sent the first man into space. People feared that Russia would become more scientifically advanced than the United States and, thus, more powerful. Americans looked to their schools to bridge the gap through curriculum and teaching methodology revisions.

In the middle 1970s and early 1980s, Texas state support of schools began to decline as oil revenues and agricultural land values declined, so local school property taxes had to be increased to offset this loss. The comparisons made between dollars spent on public education and student achievement resulted in a move for accountability, which was climaxed by the Education Summit in 1989, when President George Bush proposed reform measures that included national educational goals and school report cards. These improvements in the school system cost tax dollars, which led to more public scrutiny of the school systems (McQuire, 1990).

The goal of any successful educational institution is the academic achievement of its students. School report cards are an evaluation of the overall effectiveness of a campus

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purpose is to identify these quantitative factors so that the allocation of resources and general composition of staff and programs may be more readily identified. These quantitative indicators can be compared with the measures of student success (TAAS, attendance), but can a school be judged solely on these indicators ?

Besides these quantitative indicators, certain other influences exist in a school such as instructional leadership, instructional focus, school climate, teacher expectations, and student evaluations that may be difficult to measure quantitatively (Rossmiller, 1987). Glasser, in The Quality School (1990) and The Quality School Teacher (1992), and Mann and Inman (1984) supported these qualitative factors as being the primary influence on the success of a campus. Authorities such as George (1982), Lounsbury (1983), Martin (1993), Merenbloom (1988), and Wheelock and Dorman (1988) found successful schools to be a combination of all the quantitative and qualitative factors, depending on each school's circumstances.

There is no model for a good school, according to Ted Sizer, Chair of the Coalition of Essential Schools. "In order to be good, a school has to reflect its community. . . There's nothing you can just 'put into place,' nothing to 'implement'" (as cited in O'Neil, 1995, p. 4). Multiple factors combine to make an individual school with a unique personality, but it may be possible to identify certain factors that the successful schools have in common.

It remains to be determined at this point whether the success of Texas middle schools can be attributed to the quantitative factors reported by the Public Education Information Management System (PEIMS), the qualitative factors, or a combination of both. Once this is established, a model can be developed that middle school educators can use to plan for student success.

Statement of the Problem

The problem of this study is to determine the influence of campus financial and program characteristics on middle school success for the 1993-1994 and 1994-1995 school years, using the campus percentage of students passing all sections of TAAS and percentage attendance as measures of this success.

Purpose of the Study

Many characteristics combine to make an individual school. Some of these cannot be altered, such as socioeconomic and demographic traits. However, choices can be made concerning the use of resources, selection of staff, and program offerings on each campus. The purpose of this study is to assist middle school staffs in the planning process by identifying which of the campus financial and program characteristics have the greatest influence on successful Texas middle schools as determined by the Academic Excellence Indicator System. This will enable campus planning committees to prioritize areas when allocating resources and personnel and determining programs.

Limitations of the Study

Because the Texas system of evaluating student achievement (TAAS) was used, the conclusions and recommendations in this study regarding the measure of student achievement will be applicable only to Texas public schools or those with a similar system of evaluation. However, the results involving attendance and dropout rates should be applicable to any system that gathers similar information on its campuses.

Only 69 of the 1,180 middle schools in Texas had complete dropout data. Computer programs applicable to this analysis were not capable of using records with incomplete data. The percentage of dropouts in middle school for 1994-1995 for seventh

and eighth grades was 0.3 % and 0.6 %, respectively (Comprehensive Biennial Report, 1996). Texas Education Code § 25.085 mandates that all children under sixteen attend school. Since 16 is 3 years beyond the normal age of an eighth grade student and the dropout percentages were small, the dropout figures were not considered in this study.

Research Questions

The success of middle schools is divided into two component areas as defined by the Academic Excellence Indicator System (AEIS): TAAS scores and attendance rate. The following research questions are addressed in this study:

1. Which campus financial, demographic, and program characteristics, as reported by the Public Education Information Management System (PEIMS), influence the percentage of students passing all sections of the TAAS?

2. Which campus financial, demographic, and program characteristics, as reported by the Public Education Information Management System (PEIMS), influence the campus attendance percentage?

3. Does the influence of the campus financial, demographic, and program characteristics completely account for the percentage of all students passing all sections of the TAAS and the campus attendance percentage?

Middle School

The campuses in this study are referred to as middle schools, junior highs, or intermediate schools, but all are defined as middle schools by Texas Education Agency (1995a). Separate definitions for each of these terms were found in the literature. The primary difference in the programs is that a junior high was designed to be an introductory high school, whereas a middle school program was to be a transition between elementary

school and high school but not duplicating either (Hough, 1989). The use of these terms (middle school, junior high) in the names of the campuses in this study does not mean that type of program is in place. Grade configuration is not consistent but normally includes Grades 6 through 8 or Grades 7 through 8. An intermediate school is merely an extension of the elementary and is not present in all districts studied (where the elementary campus covers more than kindergarten through 4th grade).

Definition of Terms

Acceptable campus: In the acceptable category, schools had to have at least 25 % of all students and 25 % of all students in each student population group (African American, Hispanic, white, and economically disadvantaged) passing each section of the TAAS and a dropout rate of 6 % or less for all students and student groups. In 1994, TAAS standards of only 25 % had to be met for a campus's total number of students, and these standards were not applied to student population groups (Texas Education Agency [TEA], 1995a).

Accountability rating: Refers to the campus rating based on the Texas accountability system. A campus's rating is based on performance on the TAAS, the dropout rate, and the attendance rate. Campuses are rated exemplary, recognized, acceptable, or low performing (TEA, 1995a).

Administrator: Any intermediate, middle, or junior high school principal.

Average years experience: The sum of the total number of years of professional experience for each individual divided by the total individuals involved (TEA, 1995a).

Bilingual /English as a Second Language (ESL): Program to identify limited English-proficient (LEP) students and provide a bilingual education and ESL programs (a) to insure that LEP students are afforded full opportunity to master the essential skills and knowledge required by the state, and (b) to access achievement of these students to

ensure accountability for LEP students and the schools that serve them (Linda Thomas, personal communication, June 25, 1997).

Campus: Interchangeable with the term school.

Campus administration: The operation and management of a school.

Campus staff: Campus teachers, aides, and administrators.

Compensatory education: Financial assistance provided by Title I of the Elementary and Secondary Education Act to state and local educational agencies to meet the needs of educationally deprived, at-risk children. This includes programs for Migrant Education and Education of Homeless Children (TEA, 1995a).

Demographics: Data concerning the characteristics of a certain population.

Dropout: A student (a) who is absent from the public school in which the student is enrolled for a period of 30 or more consecutive days; (b) who does not hold a high school diploma or the equivalent; and (c) whose attendance within that period at another public school or a private or parochial school cannot be evidenced (TEA, 1995a).

Dropout rate: The number of dropouts summed across all grades, divided by the number of students summed across all grades (TEA, 1995a).

Economically disadvantaged: Those students who are eligible for free or reduced-price meals under the National School Lunch and Child Nutrition Program or other public assistance (TEA, 1995a).

Exemplary campus: In the exemplary category, schools had to have at least 90 % of all students and 90 % of students in each student population group (white, African-American, Hispanic, and economically disadvantaged) passing each section of the TAAS, a 1993-1994 dropout rate of 1 % or less for all students and each student group, and a 1993-1994 attendance rate of 94 % or greater. These schools also had to have passing rates on the TAAS tests given at grades included on that campus that exceeded the spring 1994 state average for all students and student groups (TEA, 1995a).

Gifted and talented education: Program for students who perform at or show the potential for performing at a remarkably high level of accomplishment when compared to others of the same age, experience, or environment and who: (a) exhibit high performance capability in an intellectual, creative, or artistic area; (b) possess an unusual capacity for leadership; or (c) excel in a specific academic field (Texas Education Code § 29.121).

Instruction: All activities dealing directly with the instruction of pupils, including instruction through the use of computers (TEA, 1995a).

Instructional administration: The management and improvement of the quality of instruction and the curriculum (TEA, 1995a).

Limited English proficient student: Any student enrolled in a bilingual or English as a Second Language (ESL) program. These students' TAAS scores are not included in the determination of the campus rating (TEA, 1995a).

Low performing campus: Campuses falling below the acceptable standard are rated low performing. Two exceptions to the standards exist. One is for the attendance rate requirement, which is waived if failure to meet it is the sole reason for a low performing rating. The other exception applies to schools that are initially rated low performing. If the school demonstrates sufficient improvement for each indicator below the standard, the school is rated acceptable. For TAAS, sufficient improvement is the change necessary to reach a 50 % pass rate within 5 years, and for dropout rate, it is the change needed to reach a dropout rate of 4 % within 5 years (TEA, 1995a).

Middle school: Any campus covering any of the range of Grades 5 through 9 (TEA, 1995a).

Mobile student: A student is considered to be mobile if he or she has been in membership at the school for less than 83 % of the school year (i.e., has missed six or more weeks at a particular school). A student must be present at an "as of date" in October for his or her scores to be included in the campus TAAS scores (TEA, 1995a).

Principal: The chief operational and instructional campus official (TEA, 1995a).

Recognized campus: In the recognized category, schools had to have at least 70 % of all students and 70 % of all students in each student population group (white, African-American, Hispanic, and economically disadvantaged) passing each section of the TAAS, a dropout rate of 3.5 % or less for all students and each student group, and an attendance rate of at least 94 %. The change in TAAS performance from 1994 to 1995 also had to be high enough so that the passing rate for all students and those in each student group would be at least 90 % within 5 years (TEA, 1995a).

School: The educational unit to which a principal and teachers are assigned (TEA, 1995a).

School report card: An evaluation of the educational program of a campus or school district (in Texas the annual Academic Excellence Indicator System (AEIS) report on each campus and district).

School type: Division of schools into four classifications based on lowest and highest grades offered at the school: elementary, middle, secondary, and both elementary and secondary (K-12) (TEA, 1995a).

Special education student: Any student not performing academically, emotionally, or physically in the range considered normal for his or her age level. These students are enrolled in programs for learning disabled, emotionally disturbed, or mentally retarded children. Their TAAS performance is not considered in the overall campus rating (TEA, 1995a).

TAAS (Texas Assessment of Academic Skills): This criterion-referenced test measures student achievement in reading and mathematics at Grades 5 through 8, writing at Grade 8, and science and social studies in Grade 8. The tests are given in the spring of each year (TEA, 1995a).

Total enrollment : The total number of students reported in membership at the end of October (TEA, 1995a).

TSSAS (Texas Successful Schools Award System): TSSAS was created by the Texas Legislature to recognize and reward schools that exhibit high performance or the greatest progress in achieving state educational goals. The awards are tied to the state's accountability system for public schools (TEA, 1995a).

Vocational education: Program to provide sequences of courses designed for a career pathway so that students achieve both academic and occupational competencies (Linda Thomas, personal communication, June 25, 1997).

Significance of the Study

Middle school is a crucial time in students' lives. Attitudes and achievement during these years have a great influence on the quality of the remainder of their time in school. The data collected in this study and its analysis will assist middle school campuses in maximizing student success by identifying the most influential demographic, financial, and program factors in the Academic Excellence Indicator System (AEIS) ratings of the middle school campuses.

Organization of the Study

This study will establish a list of priorities for middle school personnel who are seeking to maximize student achievement and attendance and minimize dropouts. In this chapter a brief survey of the study and background was given. Key definitions were established and the nature and sources of the collected information were discussed. Chapter 2 will present the relevant literature. Studies of state school report cards are discussed, as well as studies that examine attendance, teacher experience, teacher training, campus grade configuration, campus demographics, and school finance in relation to the outcome

variables of TAAS performance and attendance. The procedure for collection and preparation of the data is described in Chapter 3. The campus ratings were disaggregated into individual components (TAAS, attendance) and analyzed using multiple regression. Chapter 4 presents the analysis of the results and a discussion of findings in terms of the outcome variables. And, last, chapter 5 contains conclusions and recommendations based upon the findings of this study.

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characteristics for Tennessee school districts: county income per capita; average professional salary; expenditures per student; average daily membership; attendance percentage; percentage of oversized classes; percentage of students on free or reduced lunches; and percentage of professionals on Levels II and III of the Career Ladder. A correlation matrix was utilized to assess the relationship between the characteristics listed on the school report card and student performance as measured by the Tennessee Proficiency Test. Mean student outcomes were created by combining these test data for all grades with each level, converting them to z scores, and then computing the means. The researchers found the following middle school (Grades 6-8) characteristics to correlate above the + 0.50 level: percentage of free lunches (r=.69), percentage of Career Ladder teachers (r=.65), average professional salaries (r=.51), and percentage of economically disadvantaged students (r=-.69).

An analysis using Guttman's partial correlation found that these eight variables accounted for only 26.5% of middle school student achievement. Bobbett et al. (1992b) recommended examining additional data on organizational culture, student motivation, parental involvement, instructional methodology, and curricular features to explain the remainder.

The value of the school report card depends primarily on the assessment instrument (Bobbett et al., 1992c). The search for the perfect test continues in all states. Accordingly, Tennessee adopted a new assessment instrument for the 1990-1991 school year, the Tennessee Comprehensive Assessment Program (TCAP), and increased the number of grade levels tested. The characteristics reported on the report card were expanded to include the following: the number of schools in the district; the percentage of enrollment change (mobility); the percentage of regular diplomas awarded; the percentage of honors diplomas awarded; the percentage of vocational students; the percentage of special education students; and the percentage of economically disadvantaged students.

Even with the addition of these new variables and a new assessment instrument, a similar analysis using Guttman's partial correlation characteristics accounts for 48.2% of district wide student achievement at the most. Only 35.3% of middle school performance was explained by these characteristics. Ten of the 15 items listed had little or no impact on student outcomes at any (K-12) level. Attendance was the dominant factor in achievement system wide. Expenditures per student had the greatest impact at the middle school level (8.1%). The size of the school district and the income per capita had no influence on middle school student achievement (Bobbett et al., 1992c).

Using various statistical methods, French and Bobbett (1993) took a second look at the 1990-1991 Tennessee Report Card. After a review of the Educational Resource Information Center (ERIC) data base, they indicated that no single statistical treatment was endorsed by all researchers to evaluate the influence of predictor variables (school characteristics) on the dependent variable (student outcomes). Researchers, whose work Bobbett and French examined, had used one or more methods in each of their studies. Bobbett and French chose to use the Pearson product-moment correlation, Guttman's partial correlation, stepwise regression, and multiple regression to examine the Tennessee Report Card.

Each of the four methods suggested different overall conclusions. However, each method identified the percentage of economically disadvantaged students and expenditures per pupil to have a significant impact at the middle school level. French and Bobbett (1993) found the Pearson product moment correlation to generate percentages of variance between the dependent variables and independent variables exceeding 100%. This suggested that the method is flawed because it fails to take into account the correlation between the independent variables.

French and Bobbett (1993) went on to study five state report cards (Florida, Georgia, Mississippi, North Carolina, and Tennessee), and in 1994, they studied 11 state

report cards (Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia) (French & Bobbett, 1994). In addition to standardized tests, at least half the states were attempting to use other measures of achievement. Both studies found little relationship between the information on the report cards and student achievement.

The succession of assessment systems and instruments in Tennessee parallels what Texas schools have experienced with the Texas Assessment of Basic Skills (TABS), the Texas Educational Assessment of Minimum Skills (TEAMS), and the present Texas Assessment of Academic Skills (TAAS). The continual changing of assessment instruments makes the development of reports more difficult since the campuses are measured by the test as a standard. In 1995 Tennessee adopted a new assessment model, the Tennessee Value-Added Assessment System (TVAAS). This instrument attempts to measure student gains rather than achievement scores. The TCAP continues to be used as the assessment instrument. The variability in national norm gains and large changes in value-added scores from year to year have caused educators to doubt the model's validity. Factors contributing to student achievement gains have not been identified (Baker & Xu, 1995).

Mathews, Hare, and Peck (1995) examined the Mississippi School Report Card. school district characteristics. Some problems were cited with these indicators. The method of determining per pupil expenditure was not consistent among districts. Districts would often include transportation and other items under instruction. There was no common interpretation of the other indicator variables.

Mathews et al. (1995) used multiple linear regression analysis to compute the predicted accreditation rating of each district and compare it with the actual rating assigned by the Mississippi Education Department. No individual campuses were examined in this study. The outcome variables were district achievement and literacy test scores. The results

showed 41.3% of variation in the literacy test scores could be attributed to the percentage of economically disadvantaged students, student/teacher ratios, and graduation rate. About 53% of the variation in the achievement test scores were attributed to the percentage of economically disadvantaged students.

Mississippi school districts were evaluated and assigned to one of 5 accreditation levels. Out of 149 school districts, Approximately 22% of the school districts were placed into a different accreditation level when using a discriminant analysis of the report card indicators. Percentage of economically disadvantaged students was the leading indicator in this analysis. Because so few of the indicators showed significant influence and a quarter of the school districts failed to fit the model generated in the analysis, the researchers recommended that the accreditation system and the report card format needed some rethinking or school district accreditation needed reexamination (Mathews et al., 1995).

Bobbett et al. (1994) have done a study on the Arkansas school report card and two on the Texas report card (Bobbett et al., 1995, 1996). Arkansas' report card was found to account for no more than 45% of the variance in district student achievement. When the only outcome variable specific to middle school, the Arkansas Minimum Performance Test (MPT 8th), was examined, the indicators accounted for only 15% of the variance. The indicators contributing 11% of the 15% were percentages of African American students, attendance, economically disadvantaged, African American teachers, retention rate, and student/teacher ratio.

An examination of Texas high schools, Bobbett et al. (1995) found that the 73 variables on the Texas report card accounted for only 7.8% of the variance in student achievement. Attendance accounted for 5%; economically disadvantaged student percentages accounted for 1.8%; and teacher tenure accounted for 1.5%. The remaining variables accounted for about 0.5%. A district-level examination of the Texas report card in 1996 led the authors to the conclusion that Texas must reduce the percentages of

minority staff and students, central office administrators, teachers with advanced degrees, teachers with over 5 years experience, bilingual program staff and students, and economically disadvantaged students to have an overall increase in student achievement (Bobbett et al., 1996). Many of these variables involving students and staff would overlap. The district has no control over most of these variables.

The researchers in each of these studies examined indicators similar to those reported in Texas. The outcome variable in each case was student achievement. Although none of them were at the campus-level, the information provided by these reports gives a basis to compare the results of this study. A summary of the results of these studies may be found in Appendix C.

Teacher Experience and Training

The Public Education Information Management System (PEIMS) data contain a breakdown of the campus faculty by experience. The National Center for Education Statistics (1996) found that, between 1988 and 1994, American school districts began to hire more first-time teachers than experienced ones. This trend, if continued, campuses will have younger, less experienced faculties in the future.

There is no campus-level indicator for teacher training, but the literature concerning this will be cited here. Fifty percent or more of all U.S. public school teachers in 1993-1994 participated in some form of professional development or advanced university course work (National Center for Educational Statistics, 1996). The volume of teachers involved in some form of professional development implies the significance of this indicator. Relevant literature is explored in this section in an effort to explain its exclusion from the Texas campus-level indicators.

The impact of teacher training and experience appears to be most prominent at the elementary level. Heim and Perl (1974), in a study of New York schools, found no

relationship between these factors and student achievement in kindergarten through third grade. However, they did report a positive relationship in Grades 4 through 6. A study of Texas elementary schools by Lopez (1995) found no differences in performance of students of teachers with bachelor's degrees and teachers with master's degrees. Texas teacher certification exams (EXCET) scores were not a predictor of student success. The study indicated teacher experience to be the most important factor in achievement. Six to 7 years of experience were reported as necessary for teachers fully to develop their skills. Lopez reported that these skills reach a maximum point after 18 to 19 years of experience.

Wendling and Cohen (1980) found a definite positive relationship between teacher training and experience and student achievement in New York schools. Additional research supporting their finding was conducted by Turner and Camilli (1988). Their study of Colorado school districts indicated a definite relationship between teachers with a master's degree and an average level of experience and achievement in mathematics and reading. This positive influence was most prominent in elementary school and, to a lesser degree, in high school. Franklin and Crone (1992) reported a moderate correlation between teacher certification and student achievement in Louisiana schools.

Negative reports came from five sources. King (1976) and Anderson and Dorsett (1981) found only a weak relationship between teacher experience and training and student achievement. Mark and Anderson (1978), in a review of research findings, found it doubtful that these factors could have contributed to achievement. Otto (1990) observed that experience and graduate reading courses had little impact on instructional methods and, therefore, little impact on student achievement. Pollanen (1995), in a study of New York sixth graders, found teacher experience to have a negative impact on achievement.

Overall, the studies cited here are conflicting concerning the influence of teacher training and teacher experience on student achievement. While teacher experience is

reported on the campus report card, teacher training is not. It should be noted here that teacher salary is based on experience with limited influence of the training.

Teacher Tenure

Teacher tenure is defined as the number of years a teacher has been with the school district, but not necessarily with that particular campus. The PEIMS reports the teacher tenure as one of the campus indicators. The teachers affect this indicator by resigning to go to another district, retiring, or leaving the profession entirely. The literature strongly supports teacher tenure as a positive influence on student achievement.

In a successful school, success is promoted if the staff remains together. Frequent transfers are likely to retard, if not prevent, the growth of a coherent and ongoing personality, especially in the early phases of the change process (Mace-Matlock, 1987). The teachers and students and their families must work together to bring about a good school (O'Neil, 1995). There must be a unified vision of the school's mission and its method of accomplishing this mission, which takes time to develop.

Glasser (1992), in The Quality School, and Madian (1993) refer to the amount of time necessary to accomplish any change in any system. It can take several years to establish this trust, and while this trust is being established, the organization is not operating at full capacity. Hershey and Blanchard (1972) described the social need of the individual member of the organization as one that must be satisfied before productivity can be at its best. The individual then progresses on to the esteem and self-actualization level at which he or she becomes the most valuable to the organization.

Time is lost when a new staff member arrives. This new team member must learn the organization and find his or her place in it. Hartzell (1994) has a series of suggestions to minimize the negative impact on the school organization:

Give newcomers a realistic view of the school.

Become aware of the nature of job transitions and build a similar awareness in the arriving teachers.

Pay attention to informal socialization processes.

The arrival of an experienced teacher, especially if he or she has particular skills, may offer an opportunity to redistribute teaching responsibilities among the faculty members.

Involve veteran newcomers in important activities outside their immediate job descriptions and ensure they have at least as much responsibility as they had at their previous school.

Provide feedback. (pp. 1- 2)

The National Center for Educational Statistics (1996) reported that, nationwide, school districts were hiring more first-time teachers than experienced ones. When Texas lowered its retirement age to 55, many experienced teachers left the profession. The lower retirement age, combined with the high attrition rate of 1st-year teachers, has resulted in an increase in the turnover rate on campus faculties.

A review of the literature found concerns about the impact of teacher turnover on student achievement, but no research supported those concerns. There were concerns about retaining effective teachers, but few connections were made between this and overall student achievement. Only Sobel (1983) linked the national decline in mathematics achievement scores to the shortage of qualified mathematics teachers.

Several reasons were cited for teachers leaving the profession. Wasley (1992) listed several causes for teacher attrition including new principals dismantling programs and weak reward systems (career ladder). Between 1980 and 1995, the national average teacher's salary rose from $31,412 to $37,436, an increase of only 19% when adjusted for inflation. The national average work week for a public school teacher was 45 hours, with

less experienced teachers working more total hours than more experienced teachers (National Center for Educational Statistics, 1996).

A Texas State Teachers Association survey in 1996 ("Survey Shows", 1996) found that 44% of Texas teachers are considering leaving teaching, citing low pay and poor working conditions as reasons. The Texas average teacher 's salary of $31,413 ranks 35th nationally ("TCTA Teacher Survival Guide," 1996).

Finance

School finance has been a controversial issue for the last decade climaxing with a 1989 court decision. The Texas Supreme Court (Edgewood v. Kirby, 1989) upheld a 1987 decision by a state district court (250th Judicial District, Harley Clark, presiding judge) that declared the Texas school finance law unconstitutional because students did not equal opportunity to have access to educational funds regardless of where they lived.

The public perceives that more money is going into education without a significant rise in student achievement. However, most of the literature shows money spent on education has little or no effect on student achievement. The difference becomes the way the money is spent. The PEIMS gives campus indicators on money spent on each budget area, each program area, and teacher salaries.

The National Center for Educational Statistics (1996) employed a national index of public effort to fund education. It is a measure of money raised for the education of students relative to the wealth of the taxpayers. This index increased from 10.6 in 1930 to 25.9 in 1993. Revenues per student have risen from $658 in 1930 to $5,526 in 1993 (in 1995 dollars). Nationally, more money is going into education.

Mort, Reusser, and Polley (1960), as quoted by Thompson (1992), reported that a point of diminishing returns on money spent on public education existed but had not yet

been found. Massive sums of money put into education would not produce massive results, because human beings have a maximum capacity for learning over time.

Anderson and Dorsett (1981) and Burrup, Brimley, and Garfield (1988) stated that it was doubtful that resource allocation had a significant impact on student achievement. Mann and Inman (1984) placed financial resources at the bottom of a list of factors contributing to student achievement, and Rossmiller (1987) found that money put into public schools was not a significant factor in student achievement. Thompson (1992) pointed out more recent research that is in agreement with the positive effects. The Effective Schools research (Mace-Matlock, 1987) also considered the effects of resources allocated to education to be positive.

New York found that its secondary students were making only slight gains despite significant increases in resources allocated to schools (Crampton, 1992). In 1992 the Performance Evaluation and Expenditure Review Committee of Mississippi found that its state finance law was not allowing funds to be targeted in vital areas, which caused Mississippi school funds to be ineffective. In a 1992 study of 28 Rhode Island school districts, no correlation was found between increased educational spending and student achievement (Murgo & Walsh, 1993).

Fourth- and eighth-grade student achievement and the money spent directly on students excluding teacher salaries in Alabama were examined by Lockwood and McLean (1993). Increases in money spent directly on students were found to have little impact on student achievement until it reached a high level. When the money was directed to teaching higher order thinking skills, they reported a much greater impact on student achievement. It is not the money that makes a difference in public education, according to King and MacPhail-Wilcox (1994), but the way the money is used that has a positive impact on student achievement. Oswald (1995) advocates that money be used for keeping student-

teacher ratio low, hiring teachers with strong literacy skills, and retaining experienced teachers.

Teachers' salaries normally comprise the major portion of the school budget. Stern (1987) and Turner and Camilli (1988) found a positive correlation between teachers' salaries and student achievement. Cooley (1991) found no correlation in Pennsylvania; however, he stated that increasing teachers' salaries could benefit student achievement if a valid system of teacher evaluation were used. Boyle and Vrchota (1986) found no strong evidence between evaluations and student achievement.

Greater control of the school resources should be given to the individual campuses. In Texas the State Auditor (1995) found that $455 million dollars could be redirected to instruction by cutting travel expenses, soliciting bids for supplies and services, reducing excess central office staff and salaries, and reducing excess benefits. No correlation was found between these costs and student achievement.

Grade Configuration

A middle school can cover any grades from fifth through ninth, with the most common being a Grade 6 through 8 or a Grade 7 through 8 middle school (Wells, 1989). The PEIMS gives indicators for each campus describing the percentages of students in each grade.

The real factor is not the grades covered by the campus, but the campus program. Middle schools attempt to meet the needs of the age group by providing a caring, nurturing environment while offering a challenging, subject-specific curriculum. While a Grade 6 through 8 configuration is more conducive to this, problems such as building space have created other configurations with that atmosphere. Also, it should be noted here that a Grade 6 through 8 building does not necessarily imply this type of atmosphere (National Middle School Association, 1997; Williamson & Johnston, 1991).

There is a lack of conclusive evidence to support the inclusion of the fifth grade in middle school. Most experts agree that fifth graders would benefit from the middle school program. In addition, children are maturing earlier than they were in the 1960s. The reason for the doubt is the lack of consistency in middle school programs. The name middle school does not necessarily mean that the campus has a true middle school program. When research is done on campuses confirmed to have true middle school programs, the benefits to fifth graders are confirmed. (National Middle School Association, 1997).

Class Size

There exists little agreement on the influence of class size on student achievement. The literature is evenly divided with positive reports when primary grades (K-3) are the focus of the study. In addition, there are some general references to certain qualitative effects of class size reduction (i.e. school climate, class atmosphere, teacher morale) which could influence student achievement.

Few specific references to middle school class size were found. Middle school class size varies according to the particular class and the campus schedule. The PEIMS gives an indicator for student-teacher ratio for each campus which is computed by dividing the number of students by the number of teachers.

A survey of literature conducted by Templeton (1972) found little agreement on the effects of class size on achievement. In a review of research that included nearly 80 studies dating back to 1900, Glass and Smith (1979) concluded that, as class size decreases, student achievement increases. The result was especially prominent when the class size dropped below 20. Little difference was found between classes of 20 and 40 students. In 1980 Educational Research Service (ERS) reviewed the Glass and Smith report and found it flawed due to the fact that it had considered one-on-one tutorials and small-group

activities as though they were small classes. Slavin (1990), in his analysis of the Glass and Smith review, stated that, according to the data in the review, significant learning benefits do not occur until the class size is reduced to 3. Studies that examined class size reduced 50% showed only a slight benefit.

Robinson and Wittebols (1986) examined the ERS review of Glass and Smith's (1979) research and made a contradictory conclusion that there were benefits to small classes in the primary grades. These benefits decreased as the students progressed through school until they reached high school (Ramirez, 1990), where class size had no influence at all. Butler and Handley (1989) found differences in achievement in reading and math due to small classes in first and second grades. Robinson (1990) followed this with a review of research on class size, which concluded that the most significant benefits occur in kindergarten through third grade. It should be noted that only 50% of Robinson's studies cited significant benefits in these smaller classes (Slavin, 1990). The remainder of these studies found no difference between the small and regular size classes. Stern' s (1987) study of California's third and sixth graders found a positive correlation between achievement and smaller classes. Lopez (1995), in a study of Texas public schools, concluded that a class size of 13 would maximize student performance gains and that a class could be expanded to 22 without a negative impact on student performance. In 1984, Texas mandated a 22:1 teacher-student ratio in the elementary schools. No class size limits were placed on the middle school campuses. A Rand Corporation study found this to have some positive impact on student performance. When student scores on the National Assessment of Educational Progress test were controlled for family and demographic factors, Texas ranked third out of 42 states on the eighth-grade math part of the text and second on the fourth-grade math portion (Texas Education Agency, 1997b).

Indiana's 1981 PRIME TIME project reduced the student/teacher ratio in 24 kindergarten through second-grade classrooms from an average of 23:1 to 14:1. PRIME

TIME was declared successful after 1 year, based on students' reading and math achievement. The project was implemented in all Indiana first-grade classrooms the following year (Sava, 1984). Varble (1990) collected 10 groups of data from these Indiana classes involving over 2,000 first-grade students. Only three groups showed any relationship between decreased class size and achievement. Varble's conclusion was that a reduction in student/teacher ratio must be accompanied by changes in teaching methods and materials. In addition, critics have pointed out that no allowance was made for the influences of school location, demographics, teaching styles, or parent involvement in PRIME TIME (Nye, Boyd-Zaharias, Fulton, & Wallenhorst, 1992). This made it impossible to conclude that performance improved due to smaller class sizes.

In 1984 Helen Pate-Bain of Tennessee State University finished research on the impact of small class size in a Nashville school (Bain & Jacobs, 1990). Based on her results, in 1985 Tennessee began the Student/Teacher Achievement Ratio (STAR) project in grades kindergarten through third with 79 schools participating. Rather than grouping the students by ability, students were assigned at random to small (13-17 students) classes, regular (22-25 students) classes, or regular (22-25 students) classes with an aide, where they remained for all 4 years. The reading and math test results favored the smaller classes, with benefits being greatest in the first grade and declining slightly in second and third grades (Slavin, 1990). It should also be noted that low socioeconomic groups benefited the most from small classes (Nye et al., 1992), but they still scored lower than the remainder of the students.

Hiestand (1994) and Mitchell (1989), in separate studies of Chicago elementary schools, concluded that a reduction in class size alone is not sufficient to improve test scores. Cooley (1991), looking at Pennsylvania elementary schools, and Seyfarth (1988), examining Virginia students in Grades 4, 8, and 11, also found no relationship between class size and achievement.

The hidden costs of not reducing class size must be pointed out. Johnson (1990) found a significant difference between the attitudes and perceptions of teachers in regular and small classes. Teachers in small classes had more time for planning and interactions with students and fewer classroom control problems. The positive influence on school climate must be considered.

Observational studies reviewed by Slavin (1990) showed teachers utilizing essentially the same methods in large and small classes. According to Halliman and Sorensen (1985), teaching strategies must change in the smaller classes to positively impact student achievement. McIntyre and Marion (1989) referred to the many contradictory and inconclusive studies to make a similar point. It was asserted that teachers should be trained in a variety of strategies to handle different class sizes (Odden, 1990a). Student/teacher ratio reduction should not be universal. It should be implemented only in those areas that require a great deal of one-on-one instruction by the teacher and have a high teacher workload.

Cost of reduction of class size is a great concern to critics. Researchers at Stanford University conducted a cost analysis in 1984 on other techniques. Increased instructional time was found to be much less cost effective than reducing class size. Computer-aided instruction in math was found to have an impact equal to class size reduction. Although peer tutoring was found to be cost effective and educationally effective, its usefulness in the lower grades was found to be questionable. Slavin (1990) cited studies by Wasik and Slavin involving one-on-one tutoring of at-risk students by certified teachers. The benefits of this tutoring on first- and second-grade reading scores were greater than reducing class size, and the cost would be the same. Tutoring by a paraprofessional and cooperative learning also produced greater gains in achievement than reducing class size.

Campus Demographics

All Texas campuses report the demographic breakdown of their student bodies to the Public Education Information Management System (PEIMS). The campus report card produced from this information includes indicators describing the student body by percentages of race, special programs, and economically disadvantaged.

Among researchers, there was almost universal agreement concerning the relationship between socioeconomic conditions and student achievement. Using data from the National Longitudinal Study of 1988, Anderson (1992) found that schools whose students come from high-poverty areas are more at risk of academic failure. Wendling and Cohen (1980) found a similar situation in New York schools. Hodgkinson (1991), King and MacPhail-Wilcox (1994), Mann and Inman (1984), Mathews et al. (1995), and Rossmiller (1987) all concluded that adverse socioeconomic conditions were a negative influence on student achievement. Chicago (Elenbogen & Hiestand, 1989), Rhode Island (Murgo & Walsh, 1993), Louisiana (Caldas, 1993; Franklin & Crone, 1992) and Texas (Lopez, 1995) also found the same negative correlation. Thompson (1992) suggested that a true evaluation of these schools cannot be accomplished without controlling for environment and heredity variables. Only then can it be seen that these schools can make a difference in the students' achievement levels.

A study by the Florida Department of Education (1994) officials found some high-poverty schools doing better than the state average. In a study of New York sixth graders, Pollanen (1995) found the relationship between socioeconomic status and achievement to be inconsistent. Finally, in Texas, 875 schools were honored for the high performance of their economically disadvantaged students (Texas Education Agency [TEA], 1997c).

The problem itself will be difficult to correct. One of the America 2000 goals stated that , by the year 2000, all children in America will start school ready to learn. The first objective under that goal stated that all disadvantaged or disabled children will have

access to high-quality and developmentally appropriate preschool programs that help prepare them for school. The estimate for implementing this objective alone is $30 billion (Hodgkinson, 1991).

Student Retention

Retention or nonpromotion can be defined as requiring a student to repeat a particular grade or to delay entry in kindergarten or first grade (Setencich, 1994). Average retention percentages are given for each grade level in Texas for Grades K through 8 as indicators on the campus report cards. Many studies were found concerning the effects of early retention (K-2) on students in late elementary, middle, and high school. Accordingly, general discussion of retention follows in this section.

Retention began with the introduction of graded classes in the mid-1800s. Studies from as early as 1911 contained educators' concerns over the adverse effects of retention (Harvey, 1994). No studies were found to contain specific evidence of effects of retention in middle school. All contained either results from elementary school retention or general statements about retention at any grade.

Sherwood's (1993) review of the last 20 years of research found grade retention to produce little improvement in achievement. Cleveland (Ohio) public school retentions were examined in 1988-1989 (Kaczala, 1991). A low retention rate was shown to correlate with higher reading comprehension scores on the California Achievement Test in the primary grades. French and Nellhaus (1990) looked at grade level retention in the 1987-88 Massachusetts school reports. Based on data from 99 % of the schools, they found retention not to be beneficial to students. Tennessee's Project STAR researchers found that kindergarten and first-grade students did not benefit from retention, even in smaller classes (Harvey, 1994). Setencich (1994) found that California middle school students did not benefit academically from retention after being retained in kindergarten or first grade.

Lenaarduzzi and McLaughlin (1990) disagreed with the majority after examining junior high students. They found that students who were retained showed a significant improvement in academic achievement when compared to those who were considered for retention but had been promoted. Potter and Wall (1992), in South Carolina, found some slight gains in achievement but cited devastating effects on lower socioeconomic groups.

In a literature review and study of current data in Texas, Dill (1993) found no benefits in retaining students in a grade level. Even students retained for developmental reasons in kindergarten and first grade show negative impacts on their achievement in the following years. Texas retention figures were 136,754 in 1992-1993 and 125,959 in the 1993-1994 school year (or about 4%). In 1994-1995, Texas educators retained 128,369 students, or about 4% of the total student body. At an average cost of $4,504 per pupil, Texans spent $578 million for each extra year of schooling for retained students (Comprehensive Biennial Report, 1997). The money saved by not retaining students could be spent on remediation in the next grades, where research has shown it to be more beneficial than retention (Dill, 1993).

Kaczala (1991) found retention to be associated with increased dropout and mobility rates. Enrollment and attendance decreased as retention increased. Roderick (1995) and Rumberger (1995) declared retention to be the most powerful predictor of dropouts. Male, minority, and economically disadvantaged students were most likely to be retained (Meisels & Liaw, 1993). Kindergarten and first-grade retention rates of these three groups were found to be double the rate of white students in California (George, 1993).

Males made up 61% of all students retained in Texas during 1992-1995. Retention rates for Hispanic, African American students, limited English proficiency (LEP), economically disadvantaged, and urban students in Texas were all significantly higher than the state average. Minority student percentages, teacher salaries, percentage of minority

teachers, low campus TAAS scores, and dropout rates were indicators of high campus retention rates for this same period (Comprehensive Biennial Report, 1997).

Attendance

Student attendance is reported by each campus to the Public Education Information Management System (PEIMS). It comes back in the campus report card as indicators reporting overall percentages, program percentages, and racial percentages of attendance.

A majority of the literature found attendance and student performance to be positively correlated. Brodbelt's (1985) review of research cited Wilbur Brookover's findings that increasing school attendance can help raise overall student achievement. Karweit (1976) found attendance to be positively correlated with performance, especially for high school students. Coleman, Hoffer, and Kilgore (1982) found that absenteeism has a negative influence on achievement at all levels of public school. Kean, Summers, and Raivetz (1979) and Easton and Englehard (1982) reported reading achievement test scores to be linked with regular school attendance. Franklin and Crone (1992) and Caldas (1993), in separate studies of Louisiana schools, found student attendance to be directly related to achievement.

One study took the opposite position. Anderson and Dorsett (1981), in a study of St. Louis schools, stated that student attendance was an unlikely predictor of student achievement.

Student Mobility

The percentage of student mobility is reported as a campus-level indicator on the report card. A student is considered to be mobile if he or she has been in membership at the

school and has missed six or more weeks. A student must be present at an "as of date" in October for his or her scores to be included in the campus TAAS scores.

A 1990 study in Orange County (New Jersey) contained a finding that a high degree of mobility had no influence on student achievement. When only non-English speaking students were considered, the impact of mobility was slight. English-speaking mobile students scored only six points higher on the High School Proficiency Test than non-English speaking mobile students (Adduci, 1990).

In a 1993 study conducted in Austin, Texas, Paredes found different results. When mobile students records for the last 13 years were examined, an inverse relationship was found between the number of moves and achievement. An earlier study, conducted in New York in 1991, found similar results. Mehanna and Reynolds (1995) found a strong relationship between mobility and low reading achievement in a study of elementary schools serving lower socioeconomic neighborhoods.

Summary

Research has been cited concerning the influence of various factors on student achievement and attendance. The Public Education Information Management System (PEIMS) generates a volume of similar information about each campus in the state of Texas. The purpose of this study is to determine which pieces of this information are the most influential in the success of each campus program. Researchers supported teacher tenure and attendance as positive influences and demographics, retention, and mobility as negative influences. The remainder of the indicators either showed no influence or had conflicting reports concerning their influence from different researchers.

Middle school was chosen as the area of study since research has shown that this is a critical time in a student's development (Capelluti & Stokes, 1991). The campus

Academic Excellence Indicator System (AEIS) rating, based primarily on student test scores, provides a method of summarizing the overall campus success on each campus.

The next chapter describes the procedures for the collection of the data for 1993-1994 and 1994-1995 school years, including the statistical treatment. The individual campus indicators and the two outcome variables are analyzed using multiple regression to determine the relative influence of each indicator on each outcome variable.

CHAPTER 3

METHODOLOGY

Data Collection

The population for this study was all 1,180 Texas campuses designated as middle schools for both the 1993-1994 and 1994-1995 school years. Data were obtained from the Public Education Information Management System (PEIMS) about each campus's students, staff, finances, attendance, and Texas Assessment of Academic Skills (TAAS) scores. These data originated at the individual campuses and were submitted to PEIMS through the regional service centers (ESC).

In addition to the ESC's support function for the public schools, the ESC gathers all the data from the school districts it serves. These data then go through a series of edits to ensure quality and accuracy. The ESC then sends the data to the Texas Education Agency's Information System Department, which compiles the data and distributes them to school districts and the media as the district and campus report cards. This information is used for public policy decisions, performance-based accountability, and state and federal reports. Appendix B has a complete explanation of the Public Education Information Management System (PEIMS).

The staff data included the percentage breakdown of the staff by experience, salary, program served, sex, and ethnicity. Average salaries were reported for teachers on each experience level, administrators, and professional support staff (counselors). The total number of staff was given along with the number of staff in each group. Finally, the average years' experience and average years' tenure were given for the teaching staff.

Campus student data included the total number of students enrolled and a breakdown of these students by number and percentages in each program, grade, and ethnic group. Retention averages were given for each grade in regular and special education. The percentage of mobile students was also listed.

The financial data of the campus included amounts spent in each program (regular education, compensatory education, gifted and talented education, vocational education, and bilingual education) and in each general budget area (instructional, instructional administration, campus administration, and other). Percentages of the total budget and expenditures per pupil were listed for each of the general areas.

The campus data for each year consisted of the previous year's campus attendance for all students and each demographic group of students which were used as independent variables. The second and third research questions dealt with the influence of the campus indicators on the current year's total student attendance percentage. The current year's percentage attendance was obtained from the next year's campus data (i.e., the 1993-1994 attendance data were obtained from the 1994-1995 campus data).

The TAAS data utilized in this study were the total percentages of students on the campus passing all (mathematics, science, social studies, reading, and writing) tests. The standard reporting procedure used by the Texas Education Agency gives these percentages, excluding the scores of students in special education, bilingual, English as a Second Language, and mobile students. Although their scores are not computed into the total campus score, they influence the campus performance because resources and personnel are employed in their education, which would be applied elsewhere if these students were not present.

There was a "catch-all" term in the 1993-1994 data called Other Ethnicity. This term was replaced by Native American and Pacific Islander in 1994-1995. The numbers

were small in all cases, with no missing data, thus these data were not removed from the study.

Statistical Treatment

An analysis of the 1993-1994 data was accomplished using standard statistical procedures with SPSS and SAS software. There were several columns with missing data because AEIS does not report results for groups under five in number. (At that point the anonymity of the students begins to erode). These missing data were assigned a value of -9. Only those campuses with complete data sets were considered in this study.

Scatterplot matrices were used to check for homoscedasticity and linearity for pairs of variables. The variables were found to have numerous nonlinear patterns of association with heteroscedasticity. Spearman's rank correlation coefficient (r_s) , a nonparametric measure of association, was selected as an appropriate measure of association for the data set. Spearman's r_s is essentially the calculation of Pearson's product-moment correlation (r) on ranks assigned to the variables. Spearman's r_s is known to be sensitive to curvilinear patterns of association and helps to reduce the effects of heteroscedasticity on the estimation of the correlation index. Tied rankings were assigned the mean of the ranks for the data.

A correlation matrix (Spearman's r_s) was calculated on the entire set of variables, excluding the outcome variables (TAAS scores and attendance). Substantial intercorrelations between the predictors and the large number of predictors prompted the reduction of the original number of variables into a smaller subset of variables by conducting a principal component analysis on the predictor variables. The resulting composite scores (principal component scores) enjoy the properties of orthogonality and contain all of the original information in the original predictor set (Rummel, 1970). The benefits of such a procedure are that multicollinearity of the predictor set is removed, thus improving estimation of the beta coefficients in a subsequent regression of the principal component scores onto the outcome variables (TAAS, attendance); and the smaller number

of predictor variables aids in communicating the dimensionality of the data set. Additionally, the orthogonality of the composite predictor scores (principal component scores) will allow variance partitioning of the total variance in the outcome variable explained by the predictor variables. That is, the squared standardized beta coefficients for a particular predictor (a principal component score) represents the relative variance accounted for by that predictor in the outcome variable, TAAS, for example (this is relative to the entire set of predictors).

> Furthermore, if the regression equation is calculated for PC's [principal components], rather than for the predictor variables, then the contributions of each transformed variable (PC) to the equation can be more easily interpreted than the contribution of the original variables, because of the orthogonality. Thus even when mulitcollinearity is not a problem, regression on the PC's rather than the original predictor variables, may have advantages for computation and interpretation. (Jolliffe, 1986, pp. 131-132)

Dunteman (1989), Harris (1993), and Thayer (1991) also endorsed this manner of interpretation.

The use of the principal component scores in lieu of the original variables necessitates interpreting those original variables that are highly correlated with one another as a composite variable that is described herein as a factor or component. Thus, the usefulness of the composite score is directly a function of how "interpretable" the set of variables that comprise the factor. The output of the principal component analysis is a "factor loading matrix" (matrix of correlations), which describes how each of the original variables correlates with each of the factors. It is recommended that an orthogonal rotation of the factor matrix be carried out so as to aid in the interpretation of the factors (Dunteman, 1989). A VARIMAX rotation (orthogonal rotation) was performed on the factor loading matrix. This resulted in groups of variables "loading highly" (high

correlations) on one particular factor, but having low loadings with the remaining factors (Stevens, 1992). The SPSS procedure FACTOR allows the principal component scores for each case (here a case is a particular middle school) to be saved to the data file. Each middle school will have as many principal component scores as there are factors. The principal component score for a case indicates how that case represents a particular factor. The principal component score is a weighted linear combination of the standardized original variables where the weights are the factor loading coefficients:

$$f_{1i} = F_{11}*z_{i1} + F_{12}*z_{i2} + \ldots\ldots F_{1k}* z_{ik}$$

where: f_{1i} is the factor 1 score for the ith school, F_{1k} is the correlation between the kth item and factor 1, and z_{ik} is the standardized kth item for school i

and: i=1, ...n (number of middle schools)

k=1, ...q (number of items)

In this way, every school gets a set of principal component scores, which become predictors for the next level of analysis: a regression of the outcome variables (TAAS, attendance) onto the predictor variables (principal component scores, f_1, f_2, ...f_n). Only factors that accounted for over 1% of variance in the predictor set were included in subsequent analysis (i.e., Kaiser criterion, [Stevens, 1992]).

$$Y_i = b_0 + b_1* f_{i1} + b_2* f_{i2} + \ldots\ldots\ldots + b_j* f_{ij}$$

where: Y_i is the outcome variable for the ith school, b_j are the regression coefficients for the jth factor score, and f_{ij} is the jth factor score for the ith school

and: i = 1,.....,n (number of middle schools)

j = 1,.....,p (number of factor scores).

An advantage of principal component regression is that the factors it generates are totally uncorrelated, so elimination of one or more factors does not affect the others. An all-possible subsets regression was performed, yielding the Mallows' C_p statistic. This method considered all possible models that could be developed with the factors generated by the principal component analysis and then developed several models to illustrate the effect of the factors on the outcome variables. C_p, or Mallows' statistic, is an indicator of "goodness of fit" or how well a regression model fits the set of data that it is describing. When an important factor is missing from a model, the Mallows' C_p statistic is usually larger than p (the number of variables in the subset model). In a regression model that is a good fit to a set of data (all important factors are present), the C_p value should be close to the number of variables in the model (Dunteman, 1989). A model was then selected whose C_p was less than or equal to p, and the measure of the overall effect, the adjusted R^2, at a maximum (Johnson, Latour, Routten, & Brocklebank, 1994).

The remaining factors and their component variables produced by the principal component analysis were examined to find the underlying construct that caused the variables to group around the factors. A term (attendance, expenditure, program, etc.) was assigned to each factor to "give a name to the construct that underlies variability and thus identify the component substantively" (Stevens, 1992, p.376).

Multiple regression was used to determine the relative importance of each factor on the campus TAAS scores. The relative size and sign of the beta coefficients produced by the regression process describe the influence of each factor. Since the principal component factors are uncorrelated with one another, the beta coefficients may be squared and the percentage variance interpreted as the relative contribution to the outcome variable.

The relative influence of the individual indicators was determined by examining the factor loadings. The positive or negative nature was found by examining the sign of the beta coefficient and the sign of the factor loading. Like signs indicated a positive influence, and different signs indicated a negative influence.

The process was repeated, using the campus attendance figures and factors generated by the principal component to answer the second research question. Also produced was an adjusted R^2, the measure of the cumulative effect of all the factors in the model on the campus TAAS scores and attendance. This was the answer to the final research question. The same methodology was used for the 1994-1995 data and the research questions. Similar studies of school report cards or similar data in Arkansas (Teeter et al., 1983), Tennessee (French & Bobbett, 1993), New York (Pollanen, 1995), and Mississippi (Mathews et al., 1995) analyzed data in a similar manner.

Summary

The study seeks the determination of the critical factors in successful Texas middle schools today. That success is defined by the Texas Education Agency with the campus scores on the Texas Assessment of Academic Skills (TAAS) and the campus attendance rate. Based on the relevant literature, the indicators that described the campus staff, students, finances, attendance, and TAAS scores were selected from the Academic Excellence Indicator System (AEIS) report on the schools (campus report card). The large number of indicators or predictors and the problem of multicollinarity prompted a principal component analysis. The indicators then would cluster around several uncorrelated factors. Multiple regression was then used to determine the relative influence of each factor on the two parts of campus success (outcome variables), TAAS scores and attendance. The analysis also determined the cumulative influence of all factors on the outcome variables.

Chapter 4 reports the results of each analysis beginning with the 1993-1994 data. Tables are used to illustrate the influences of the AEIS indicators on the outcome variables. The process is repeated for the 1994-1995 data. In chapter 5 the results of both years' analyses are critically examined, and all conclusions and recommendations for student success and administrative planning are discussed.

CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

Introduction

In this study an analysis was performed on the Academic Excellence Indicator System (AEIS) data, using standard statistical procedures to determine the influence of these indicators on the campus attendance and Texas Assessment of Academic Skills (TAAS) scores.

Chapter 3 included a detailed explanation of the methodology of this study. The outcome of this analysis is reported in this chapter for both the 1993-1994 and 1994-1995 school years separately. It begins with the 1993-1994 school year and the results of the principal component analysis used in all three research questions. The results pertaining to each research question are then addressed. The process is repeated for the 1994-1995 data.

Population

All 1,180 Texas campuses classified as middle schools for both the 1993-1994 and 1994-1995 school years by the Texas Education Agency (TEA) were the population for this study. A middle school, according to the TEA definition, is any campus including any part of Grades 5 through 9. Of all the complete records, 771 were extracted from this population including 283 campuses from the six metropolitan areas surrounding Dallas, Fort Worth, San Antonio, Austin, Houston, and El Paso.

The 1993-1994 data for the 771 middle school campuses consisted of 79 indicators

campus. There was a total of 575,765 students in this group, with 45.8% of them describing the students, staff, financial data, attendance, and TAAS scores for each (263, 779) coming from the six largest metropolitan areas. A majority of the students in the population were in Grades 6, 7, and 8. Although some middle schools did cover Grades 5 and 9, only 4.99% of the population were in the these two grades. Seventy-nine of the 771 campuses reported serving Grade 5 and 46 reported serving Grade 9.

The 24 student indicators gave information on student demographics, program participation, grade configuration, and total student population. Table 1 contains the characteristics of the significant indicators including means and ranges. (Appendix E gives the means, ranges, and standard deviations for all indicators).

Table 1

Student Indicators 1993-1994

Indicator	Mean	Range
Students-% economically disadvantaged	41.59	98.4
Students-% limited English proficient (LEP)	6.68	69.1
Students-% special education	11.86	24.6
Students-% vocational education	11.14	67.2
Students-% bilingual education	5.38	63.9
Students-% gifted and talented	9.34	65.6
Students-% white	52.69	98.2
Students-% Hispanic	14.19	92.7
Students-% African American	31.02	99.4
Students-% other	2.09	26.9
Total enrollment	746.78	1918

Note: The following definition is associated with Table 1: Students-% other: Percentage of total students reported as either Pacific Islander or Native American.

The 39 indicators describing the staff in 1993-1994 included demographic, position, program, experience, and salary information. The program, position, student/teacher ratio, and demographic indicators are shown in Table 2 along with means and ranges. (A complete description of all the staff indicators, including experience and salary indicators, may be found in Appendix E).

Table 2

Staff Indicators 1993-1994

Indicator	Mean	Range
Student/teacher ratio	15.97	17.40
Staff-% teachers	79.74	39.30
Staff-% professional support	6.64	27.30
Staff-% campus administrators	4.22	10.40
Staff-% minority	21.11	96.60
Teachers-% regular program	78.69	76.20
Teachers-% vocational program	1.91	10.40
Teachers-% bilingual/ESL Program	1.78	52.20
Teachers-% compensatory Program	3.88	51.40
Teachers-% gifted and talented	2.41	40.00
Teachers-% special education	9.08	50.50

The financial data for 1993-1994 had 11 indicators reporting expenditures by program and budget area and total expenditures. Table 3 describes the program

expenditures by percentages of the total instructional budget. (A complete listing of data characteristics including total expenditures and budget area expenditures is in Appendix E).

Table 3

Financial Indicators 1993-1994

Indicator	Mean	Range
Expenditures-% regular	73.54	99.3
Expenditures- % bilingual/ESL education	1.37	40.6
Expenditures-% compensatory education	10.32	98.8
Expenditures-% gifted and talented	2.08	39.6
Expenditures-% special education	11.28	37.3
Expenditures-% vocational education	1.41	10.4

Six attendance indicators and one TAAS indicator from the 1993-1994 data were used in the analysis. The attendance data reflected the previous year, and the TAAS data was the overall percentage of students on the campus passing all sections of the TAAS. The TAAS data did not include scores from students in special programs (special education, ESL, bilingual, mobile). The means and ranges of these data are shown in Table 4.

Table 4

Attendance and TAAS Indicators 1993-1994

Indicator	Mean	Range
Campus % attendance 1992-1993	94.95	36
Campus attendance (white) % 1992-1993	94.92	41.4
Campus attendance (female) % 1992-1993	94.95	36.1
Campus attendance (male) % 1992-1993	94.95	36

(table continues)

Indicator	Mean	Range
Campus attendance (econ. dis) % 1992-1993	94.27	35.2
Campus attendance (special ed) % 1992-1993	93.01	30.6
TAAS campus % pass all- 1994	54.1	86.1

Note: Econ. dis. means economically disadvantaged; special ed. means special education; TAAS campus % pass all- 1994 is the percentage of students on campus passing all sections of the TAAS. (These data are also described in Appendix E).

Data Analysis Results 1993-1994

Scatterplot matrices were generated to check for homoscedasticity and linearity for pairs of indicators. The data were found to have numerous nonlinear patterns of association with heteroscedasticity. Spearman's rank correlation coefficient (r_s) was used as a measure of association for the set to reduce the effects of heteroscedasticity on the correlation matrix. Tied rankings were assigned the mean of the ranks of the data.

A correlation matrix found substantial intercorrelations between the predictors. This, together with the large number (79) predictors, prompted the use of a principal component analysis on the predictor variables (indicators). A VARIMAX rotation (orthogonal rotation) was performed on the factor loading matrix. This resulted in groups of indicators "loading highly" (high correlations) on one particular factor, but having low loadings with the remaining factors (Stevens, 1992). This process yielded 20 factors, each with one or more indicators clustering together and sharing some common construct. Each factor received a designation based on this construct.

The 20 factors yielded in the principal component analysis of the 1993-1994 data were teacher salary; vocational education programs; attendance (previous year); African

American students/teachers; campus demographics; Grade 5; teacher/aide ratio; expenditures-other and instructional; campus size; teacher experience; student average retention; gifted and talented program; bilingual and ESL programs; teachers (regular and compensatory); campus grade configuration; student/teacher ratio; teacher gender; expenditures (all not listed earlier); special education programs; and teacher experience (6 to 10 years). Each factor loading describes the relative contribution of the indicator to the overall effect of factors (see Appendix F). The indicators and their factor loadings cannot be considered separately due to the interactions between them. This can be compared to a group of children holding hands and running. The faster children make the slower ones faster, while the slower children slow the entire group. Each child's speed would be different if they dropped hands and ran alone. In the same manner, each indicator's effect would be different if it acted alone.

Research Question 1: The first research question concerns the effects of the demographic, financial, and program characteristics on the campus TAAS scores. Once the principal factors were extracted from the 1993-1994 data, a model was needed to eliminate all factors that did not significantly contribute to the overall effect. An all-possible subsets regression was performed yielding the Mallows' C_p statistic. The method considered all-possible models that could be developed with these 20 factors. When an important factor is missing from a model, the Mallows' C_p statistic is usually larger than p (the number of indicators in the subset model). If all the important factors are present in the model, the Mallows' C_p statistic is approximately equal to p. A model was then selected whose C_p was less than or equal to p, and the measure of the overall effect, the adjusted R^2, at a maximum that eliminated the following factors: teacher salary, special education programs, expenditures (other/instruction).

Multiple regression was used to determine the relative influence of each factor on the campus TAAS score. Table 5 illustrates the results of the multiple regression, with the

beta coefficients for each factor score. The percentage of influence of the factor was determined by the squaring of the beta coefficient. The sign of the beta coefficient indicates whether the factor has a positive or negative influence on the campus TAAS scores. The factors with a positive influence were attendance (previous year), teacher/aide ratio, campus size, teacher gender, vocational education programs, gifted and talented programs, student/teacher ratio, and other program expenditures

Table 5 shows the factors used in the multiple regression analysis and the predictor indicators that loaded on each. The percentage each factor contributes to the outcome variable (TAAS) is shown in the column marked Factor % influence. This number is found by squaring the beta coefficient. The sign of the factor influence is the same as the sign of the beta coefficient. The relative contribution of each predictor variable to the factors can be seen in the factor loading with the last column showing the sign of its effect. (This is determined by the sign of the product of the factor loading and the beta coefficient).

Table 5

Results of the Multiple Regression Analysis for TAAS Scores 1993-1994 Data

Factor	Variable name	Factor % influence	Beta	Factor loading	Effect
F2	Campus %	21.682%	.465641	.94195	+
	Male %			.91741	+
Attendance	Female %			.91109	+
1992-1993	Economically disadvantaged[a] %			.86443	+
	Special education %			.85643	+
	White %			.83369	+
	Students- campus % mobile			-.54254	-
F3	Staff-% minority	29.428%	-.542478	.82132	-
	Students-% white			-.81014	+
Demographic	Teachers-% white			-.79946	+
	Teachers-% Hispanic			.77001	-
	Students-% Hispanic			.74665	-
	Students-% econ disadvantaged			.71378	-
F4	Staff- % educational aides	0.445%	.066687	-.94790	-
Teacher/aide	Staff- % professional staff			.94790	+
ratio	Staff- % teachers			.90728	+
	Educational aides			-.84114	-

(table continues)

Factor	Variable name	Factor % influence	Beta	Factor loading	Effect
F5	Expenditures- % campus admin	0.336%	.057944	-.74392	-
	Staff- % campus administrators			-.69522	-
Campus	Teacher			.68065	+
Size	Total staff			.67867	+
	Professional staff			.65973	+
	Total enrollment			.60517	+
	Total operating expenditures			.58387	+
F6	Grade 7	1.800%	-.134136	.82273	-
	Grade 8			.78773	-
Retention	(Special education) Grade 7			.74945	-
(average	(Special education) Grade 8			.65991	-
percentage)	(Special education) Grade 6			.57162	-
F7	Expenditures-% bilingual ed	2.433%	-.155994	.76843	-
	Students-% bilingual program			.74457	-
Bilingual	Teachers-% bilingual/ESL			.73713	-
	Students-% LEP			.68632	-
F8	Students-% Grade 6	0.157%	-.039498	.87258	-
	Students-% Grade 8			-.73613	+
Grade	Students-% Grade 7			-.69908	+
Configuration	Retention-average % Grade 6			.62431	-
F9	Teachers-% male	5.337%	.231027	-.81695	-
Gender	Teachers-% female			.81695	+
F11	Teachers-% vocational ed	0.083%	.028785	.72157	+
	Students-% vocational ed			.70334	+
Vocational	Expenditures-% vocational ed			.67999	+
education	Students-% Grade 9			.44899	+
F12	Students-% African American	4.172%	-.204266	.84661	-
African Amer.	Teachers-% African American			.80984	-
F13	Average retention-Grade 5	0.151%	-.038875	.82398	-
Grade 5	Ave retention (sp ed) Grade 5			.71888	-
	Students-% Grade 5			.71773	-
F15	% 1 to 5 years	0.800%	-.089425	.81288	-
	% 11 to 20 years			-.62411	+
Teacher	% more than 20 years			-.60060	+
experience	% zero years			.54261	-
F16	Students-% gifted and talented	2.711%	.164655	.73509	+
Gifted and	Teachers-% gifted and talented			.72925	+
talented	Exp-% gifted and talented			.62988	+
F17	Teachers-% compensatory ed	0.153%	-.039096	.79813	-
	Teachers-% regular education			-.72678	+
F18	Student/teacher ratio	0.537%	.073262	.62155	+
	Teachers-% other programs			.39961	+
F19	% Instructional administration	0.203%	.045009	-.46599	-
Expenditures	% Compensatory education			-.44477	-
	% Regular education			.43565	+
F20	Teachers-% 6 to 10 yrs	0.073%	-.026955	-.89056	+
Experience	experience				

Research Question 2. The second research question addresses the influence of the indicators on student attendance. Using the same set of principal component factors derived earlier for the 1993-1994 data (see Appendix F), an all-possible subsets regression was performed yielding the Mallows' C_p statistic. A model was then selected whose C_p was less than or equal to p (the number of indicators in the model) and the measure of the overall effect, the adjusted R^2, at a maximum. This model eliminated the factors concerning teacher/aides ratio, campus size, teacher experience, teachers (regular/compensatory) , student/teacher ratio, and teachers (6 to 10 years experience).

Multiple regression was then used to determine the relative importance of each factor on the campus attendance. Table 6 illustrates the results of the multiple regression, with the beta coefficients for each factor score. The sign of the beta coefficient is the same as the sign of the influence of that factor on student attendance. The positive influences on student attendance were attendance (previous year), campus grade configuration, teacher gender, gifted and talented programs, and other programs expenditures.

As in the previous question, the factor percentage of influence was determined by the squaring of the beta coefficient. The relative contribution of each predictor variable to the factors can be seen in the factor loading. When the signs of the beta coefficient and the factor loading of an indicator are the same, the indicator makes a positive contribution to the overall campus attendance. When the signs are different, the contribution is negative. The last column in Table 6 shows the overall effect of each indicator on campus attendance.

Table 6

Results of the Multiple Regression Analysis for Attendance 1993-1994 Data

Factor	Variable name	Factor % influence	Beta	Factor. loading	Effect
F1	Average salary 1 to 5 yrs exp	2.376%	-.154127	.88197	-
	Average salary 11 to 20 yrs exp			.86944	-
Teacher	Average salary (base)			.83674	-
salary/	Average salary >=20 yrs exp			.79720	-
experience	Average salary 6 to 10 yrs exp			.79145	-
	Average salary zero yrs exp			.74047	-
	Students-% other ethnicity			.39920	-
	Staff-% professional support			.37615	-
F2	Campus % attendance	37.930%	.615877	.94195	+
	Male % attendance			.91741	+
Attendance	Female % attendance			.91109	+
1992-1993	Econ disadv % attendance			.86443	+
	Special ed % attendance			.85643	+
	White % attendance			.83369	+
	Students-campus % mobile			-.54254	-
F3	Staff-% minority	4.057%	-.201413	.82132	-
	Students-% white			-.81014	+
Demographics	Teachers-% white			-.79946	+
	Teachers-% Hispanic			.77001	_
	Students-% Hispanic			.74665	_
	Students-% econ disadvantaged			.71378	_
F6	Grade 7	1.364%	-.116788	.82273	_
	Grade 8			.78773	_
Retention	(Special education) Grade 7			.74945	_
average	(Special education) Grade 8			.65991	_
	(Special education) Grade 6			.57162	_
F7	Expenditures-% bilingual ed	0.776%	-.08811	.76843	_
	Students-% bilingual program			.74457	_
Bilingual/	Teachers-% bilingual/ESL			.73713	_
ESL	Students-% LEP			.68632	_
F8	Students-% Grade 6	0.383%	.061912	.87258	+
	Students-% Grade 8			-.73613	-
Grade	Students-% Grade 7			-.69908	-
configuration	Retention-average Grade 6			.62431	+
F9	Teachers-% male	0.262%	.051221	-.81695	-
Gender	Teachers-% female			.81695	+
F10	Expend-% special education	0.392%	-.062621	.81967	-
Special	Teachers-% Special education			.81407	-
education	Students--% special education			.68009	-

(table continues)

Factor	Variable name	Factor % influence	Beta	Factor. loading	Effect
F11 Vocational education	Teachers-% vocational ed	0.364%	-.060337	.72157	-
	Students-% vocational ed			.70334	-
	Expenditures-% vocational ed			.67999	-
	Students-% Grade 9			.44899	-
F12 African American	Students-% African American	1.609%	-.126832	.84661	-
	Teachers-% African American			.80984	-
F14	Expenditures-% other	0.390%	-.062438	.96715	-
	Expenditures-% instruction			-.94843	+
F16 Gifted and talented	Students-% gifted and talented	0.732%	.085581	.73509	+
	Teachers-% gifted and talented			.72925	+
	Expend-% gifted and talented			.62988	+
F19 Programs	Expend-% instructional adm	0.115%	.033951	-.46599	-
	Expend-% compensatory ed			-.44477	-
	Expend-% regular education			.43565	+

Research Question 3. The third research question concerns the influence of the campus financial, demographic, and program characteristics on the percentage of all students passing all sections of the TAAS and the attendance percentage in 1993-1994. The multiple regression analysis that yielded the results in the first two questions gave the adjusted R^2, which is a measure of the combined influence of all the factors and can be converted into a percentage (see Table 7).

Table 7

Overall Influence of the 1993-1994 Indicators on TAAS and Attendance

	1993-1994 TAAS scores	1993-1994 attendance
Adjusted R^2	.69922	.50016
Corresponding % of influence	69.922%	50.016%

Population 1994-1995

As was the case in the 1993-1994 analysis, all 1,180 Texas campuses that were classified as middle schools for both the 1993-1994 and 1994-1995 school years by the Texas Education Agency (TEA) were the population for this study. The TEA defines a middle school as any campus containing any of Grades 5 through 9. Of the complete records, 771 were extracted from this population, including 283 campuses from the six metropolitan areas surrounding Dallas, Fort Worth, San Antonio, Austin, Houston, and El Paso.

The 1993-1994 data for the 771 middle school campuses consisted of 81 indicators describing the students, staff, financial data, attendance, and TAAS scores for each campus. The additional indicators were due to the Other indicator being divided into Pacific Islander and Native American for both the staff and student demographic data. There was a total of 577,302 students in this group, with 45.76% of them (264,193) coming from the six largest metropolitan areas. The student population increased 0.267 % from 1993-1994.

The majority of the students in the population were in Grades 6, 7, and 8. Although some middle schools did cover Grades 5 and 9, only 5.06% of the population was in these two grades. Of the 771 campuses, 75 reported serving Grade 5 in 1994-1995 and 45 reported serving Grade 9.

The 25 student indicators gave information on the student demographics, program participation, grade configuration, and total student population. The means, change from 1993-1994, and ranges are given in Table 8 for the significant data. (Appendix E contains means, ranges, and standard deviations for all student indicators).

Table 8

Student Indicators 1994-1995

Indicator	Mean	Percent change in mean from 93-94	Range
Students-% economically disadvantaged	43.44	4.45	98.4
Students-% limited English proficient	7.23	8.23	69.1
Students-% special education	12.49	5.31	24.6
Students-% vocational education	11.70	5.03	67.2
Students-% bilingual education	5.78	7.43	63.9
Students-% gifted and talented	10.03	7.39	65.6
Students-% white	51.71	1.90	98.2
Students-% Hispanic	31.85	-2.68	92.7
Students-% African American	14.29	0.70	99.4
Students-% other[a]	2.15	28.70	26.9
Total enrollment	748.77	0.27	1918

[a] Figures given for 1994-1995 are combined Pacific Islander and Native American.

The 39 indicators describing the staff in 1994-1995 included demographic, position, program, experience, and salary information. Table 9 reports important statistics for staff position and program indicators (see Appendix E means, ranges, and standard deviations of all staff data).

Table 9

Staff Indicators 1994-1995

Indicator	Mean	Percent change in mean from 93-94	Range
Student/teacher ratio	15.58	-2.44	19.2
Staff-% teachers	79.28	-0.58	34.1
Staff-% professional support	6.64	0.00	24.1
Staff-% campus administrators	4.17	-1.18	14.4
Staff-% minority	21.7	2.79	95.6
Teachers-% regular program	78.71	0.03	59.5
Teachers-% vocational program	2.21	15.70	29
Teachers-% bilingual/ESL program	1.74	-2.25	22.9
Teachers-% compensatory program	3.35	-13.66	39.7
Teachers-% gifted and talented	2.58	7.05	32.5
Teachers-% special education	9.17	0.99	28.2

The financial data for 1994-1995 had 11 indicators reporting expenditures by program and budget area and total expenditures. Table 10 describes the means, ranges, and changes for 1993-1994 for significant program expenditures. (Appendix E contains means, standard deviations, and ranges for all financial data).

Table 10

Financial Indicators 1994-1995

Indicator	Mean	Percent change in mean from 93-94	Range
Expenditures-% regular	73.54	-1.66	99.3
Expenditures- % bilingual	1.37	7.03	40.6
Expenditures-% compensatory	10.32	8.98	98.8
Expenditures-% gifted and talented	2.08	-1.89	39.6
Expenditures-% special education	11.28	3.20	37.3
Expenditures-% vocational	1.41	0.00	10.4

Six attendance indicators and one TAAS indicator from the 1993-1994 data were used in the analysis. The attendance data reflected the previous year, and the TAAS data were the overall percentage of students on the campus passing all sections of the TAAS. The TAAS data did not include scores from students in special programs (special education, ESL, bilingual, mobile students). Table 11 shows means, ranges, and changes from the previous year for all data.

Table 11

Attendance and TAAS Indicators 1994-1995

Indicator	Mean	Percent change in mean from 93-94	Range
Campus % attendance 93-94	95.14	0.20	36.20
Campus attendance (white) % 93-94	95.14	0.23	45.70
Campus attendance (female) % 93-94	95.18	0.24	34.30
Campus attendance (male) % 93-94	95.11	0.17	36.70
Campus attendance (econ dis) % 93-94	94.48	0.22	34.20
Campus attendance (special ed) % 93-94	93.17	-0.17	34.30
TAAS campus % pass all- 1995	56.71	4.82	88.10

Note: Econ. dis. means economically disadvantaged; special ed. means special education; TAAS campus % pass all-1995 is the percentage of students on campus passing all sections of the TAAS. (Appendix E lists the means, ranges, and standard deviation for all TAAS and attendance indicators).

Data Analysis Results 1994-1995

As before, scatterplot matrices were generated to check for homoscedasticity and linearity for pairs of indicators. The data were found to have numerous nonlinear patterns of association with heteroscedasticity. Spearman's rank correlation coefficient was used as a measure of association for the set to reduce the effects of heteroscedasticity on the correlation matrix. Tied rankings were assigned the mean of the ranks of the data.

A correlation matrix found substantial intercorrelations between the predictors. This, together with the large number of predictors (81), prompted the use of a principal component analysis on the predictor variables (indicators). A VARIMAX rotation

(orthogonal rotation) was performed on the factor loading matrix. This resulted in groups of indicators "loading highly" (high correlations) on one particular factor, but having low loadings with the remaining factors (Stevens, 1992). This process yielded 20 factors, each with one or more indicators clustering together. This interaction between these indicators loading on a factor is due to a construct shared by all. This was used to give each of the 20 factors a name describing its overall area of influence: teacher salary; vocational education programs; attendance (previous year); African American students/teachers; campus demographics; grade 5; teacher/aide ratio; expenditures (other/instructional); campus size; teacher experience; student retention; gifted and talented programs; bilingual/ ESL programs; teachers (regular/compensatory); campus grade configuration; teacher experience (11 to 20 years); teacher gender; expenditures (all not listed earlier); special education programs; and teacher experience (6 to 10 years). Each factor loading describes the relative contribution of the indicator to the overall effect of factor . The factor loadings are given in the Appendix G so that the relationship between them can be judged.

Research Question 1. An all-possible subsets regression was performed on the principal component factors, which yielded the Mallows C_p statistic. The model selected had the highest value of the Mallows C_p which did not exceed p (the number of indicators in the subset). This model eliminated 5 of the 20 factors generated by the principal component analysis (teacher salaries, special education, vocational education, instructional/other expenditures, and teacher experience).

A multiple regression analysis was performed on the remaining factors, as shown in Table 12. This process yielded the beta coefficients, a measure of influence, for each factor. These were squared to yield the factor percentage of influence (Factor % influence). (The sign of the beta coefficient determines the sign of the factor's influence on the campus TAAS scores).Those factors with a positive influence were attendance (last year) , campus

size, the ratio of teachers to aides, campus grade configuration, Grade 5, teacher gender, gifted and talented programs, and teachers with 6 to 10 years of experience.

The influence of the individual indicators on the campus TAAS scores may be found by examining the factor loadings of each. The relative size of the loading tells its influence relative to the others in that factor. The positive or negative quality of the indicator's influence (see Table 12, last column) can be determined by the sign of the product of the its factor loading and the beta coefficient for that factor.

Table 12

Results of the Multiple Regression Analysis for TAAS 1994-1995 Data

Factor	Variable name	Factor % influence	Beta	Factor. loading	Effect
F2	Campus % attendance	20.660%	.454532	.93465	+
	Male % attendance			.90864	+
Attendance	Female % attendance			.90046	+
1993-1994	Econ Disadv % attendance			.86093	+
	Special ed % attendance			.85132	+
	White % attendance			.82737	+
	Campus % mobile students			-.51902	-
F3	Students-% white	32.277%	-.568131	-.80560	+
	Teachers-% minority			.81929	-
Demographics	Teachers-% white			-.80048	+
	Teachers-% Hispanic			.76026	-
	Students-% Hispanic			.75020	-
	Students-% econ disadvantaged			.72217	-
	Teachers	0.2337%	.048338	.78198	-
F4	Total staff			.77863	+
	Professional staff			.76428	+
Campus size	Staff-% campus administrators			-.65130	-
	Expenditures-% campus adm			-.65934	-
	Campus total enrollment			.72115	+
	Total operating expenses			.69333	+
F5	Grade 7	3.873%	-.196824	.81410	-
	Grade 8			.77698	-
Retention	(Special education) Grade 7			.72819	-
average	(Special education) Grade 8			.68159	-
	(Special education) Grade 6			.59845	-
F6	Staff-% educational aides	0.704%	.083888	-.92909	-
Teacher/	Staff-% professional staff			.92909	+
Aides	Staff-% teachers			.88525	+
	Educational aides			-.82476	-

(table continues)

Factor	Variable name	Factor % influence	Beta	Factor. loading	Effect
F8 Grade Configuration	Students-% Grade 6	0.155%	.039365	.87579	+
	Students-% Grade 8			.78158	+
	Students-% Grade 7			-.71474	-
	Retention-average Grade 6			.58039	+
F9 ESL/ bilingual	Expenditures-% bilingual	2.162%	-.147043	.76738	-
	Teachers-% bilingual/ESL			.75969	-
	Students-% bilingual education			.72037	-
	Students-% LEP			.67695	-
F12 Grade 5	Students-% Grade 5	0.095%	.030831	.72478	+
	Retention-average Grade 5			.80104	+
	Retention-ave (sp ed) Grade 5			.72640	+
F13 Gender	Teachers-% female	4.269%	.206624	.78832	+
	Teachers-% male			-.78832	-
F14 African American	Students-% African American	3.960%	-.198998	.88888	-
	Teachers-% African American			.80821	-
F16 Gifted and talented	Expend-% gifted and talented	2.900%	.170492	.65446	+
	Students-% gifted and talented			.72228	+
	Teachers-% gifted and talented			.66795	+
F17 Expenditures	% Instructional administration	0.614%	-.078376	.43038	-
	% Compensatory education			.61725	-
	% Regular education			-.65145	+
F18	Teachers-% compensatory ed	0.148%	-.038480	.84627	-
	Teachers- % regular education			-.66515	+
F19	Teachers-% 11 to 20 years exp	0.706%	-.084002	-.77943	+
F20	Teachers-% 6 to 10 years exp	0.475%	.068904	.90936	+

Research Question 2. The effects of these indicators of the 1994-1995 campus attendance rates were found through a similar process. An all-possible subsets regression was performed on the factors generated by the principal component analysis, which yielded the Mallows C_p statistic. A model was selected that had a Mallows C_p that was less than p with a maximum value of R^2. Three of the original 20 factors shown in Appendix G (teachers/aides, Grade 5, and instructional/other expenditures) were eliminated.

First, a multiple regression was performed on the remaining factors derived by the principal component analysis . This gave the beta coefficients for each factor, showing the relative positive or negative influence of each on the campus attendance rate. The

percentage influence of the factor was obtained by squaring the beta coefficient with the sign of the influence being the same. The factors influencing attendance positively were previous year's attendance, grade configuration, campus size, teacher gender, gifted and talented programs, compensatory/regular expenditures, teachers with 6 to 10 years experience, and teachers with 11 to 20 years experience.

The factor loadings of each indicator may be used to determine their relative influence on the campus attendance. The sign of the product of the beta coefficient and factor loading determined the overall sign of the indicator's influence.

Table 13

Results of the Multiple Regression Analysis for Attendance 1994-1995 Data

Factor	Variable Name	Factor % influence	Beta	Factor. loading	Effect
F1	Salary 1 -5 yrs exp	1.360%	-.116607	.86970	-
	Salary (base)			.84140	-
Teacher	Salary 11- 20 yrs exp			.83654	-
salary	Salary =>20 yrs exp			.81517	-
	Salary 0 years exp			.78291	-
	Salary 6 -10 years exp			.73322	-
	Average campus adm salary			.66283	-
	Ave camp prof Support salary			.62688	-
	Students-% Pacific Islander			.49675	-
	Staff-% professional support			.38168	-
	Student/teacher ratio			.38074	-
F2	Campus %	40.251%	.634439	.93465	+
	Male %			.90864	+
Attendance	Female %			.90046	+
1993-1994	Economically disadvantaged %			.86093	+
	Special education %			.85132	+
	White %			.82737	+
	Campus % mobile students			-.51902	-
F3	Students-% white	4.336%	-.208235	-.80560	+
	Teachers-% minority			.81929	-
Demographics	Teachers-% white			-.80048	+
	Teachers-% Hispanic			.76026	-
	Students-% Hispanic			.75020	-
	Students-% eco disadvantaged			.72217	-

(table continues)

Factor	Variable name	Factor % influence	Beta	Factor. loading	Effect
F4	Teachers	0.152%	.039023	.78198	+
	Total staff			.77863	+
	Professional staff			.76428	+
Campus size	Staff- % campus administrators			-.65130	-
	Expenditures-% campus adm			-.65934	-
	Campus total enrollment			.72115	+
	Total operating expenses			.69333	+
F5	Grade 7	1.567%	-.125172	.81410	-
	Grade 8			.77698	-
Retention	(Special education) Grade 7			.72819	-
average	(Special education) Grade 8			.68159	-
	(Special education) Grade 6			.59845	-
F7	Teacher-ave yrs experience	0.241%	-.049081	.93793	-
	Teacher-=> 20 yrs experience			.84980	-
Teacher	Teacher-Average years tenure			.83511	-
experience	Teacher-1 to 5 yrs experience			-.65642	+
F8	Students-% Grade 6	0.155%	.039313	.87579	+
Grade	Students-% Grade 8			-.78158	-
configuration	Students-% Grade 7			-.71474	-
	Retention average Grade 6			.58039	+
F9	Expenditures-% bilingual	0.218%	-.046655	.76738	-
ESL/	Teachers-% bilingual/ESL			.75969	-
bilingual	Students-% bilingual education			.72037	-
	Students-% LEP			.67695	-
F10	Teachers-% special education	0.344%	-.058677	.81697	-
Special	Expend-% special education			.81790	-
education	Students-% special education			.66341	-
F11	Teachers-% vocational ed	1.381%	-.117513	.72086	-
	Students-% vocational ed			.70358	-
Vocational	Expenditures-% vocational ed			.63520	-
education	Students-% Grade 9			.60609	-
F13	Teachers-% female	0.432%	.065715	.78832	+
Gender	Teachers-% male			-.78832	-
F14	Students-% African American	1.600%	-.126394	.88888	-
African Ame.	Teachers-% African American			.80821	-
F16	Expenditures-%	1.265%	.112492	.65446	+
Gifted and	Students-%			.72228	+
talented	Teachers-%			.66795	+
F17	% Instructional administration	0.138%	-.037184	.43038	-
Expenditures	% Compensatory education			.61725	-
	% Regular education			-.65145	+
F18	Teachers-% compensatory ed	0.160%	.040026	.84627	+
Comp/reg ed	Teachers- % regular education			-.66515	-
F19[c]	Teachers-% 11 to 20 years exp	0.361%	.060106	-.77943	-
F20[c]	Teachers-% 6 to 10 years exp	0.147%	.038307	.90936	+

[c] Both these factors represent teacher experience.

Research Question 3. The third research question concerns the influence of the campus financial, demographic, and program characteristics on the percentage of all students passing all sections of the TAAS and the attendance percentage in 1994-1995. The multiple regression analysis that yielded the results in the first two questions gave the adjusted R^2 , which is a measure of the combined influence of all the factors and can be converted into a percentage (see Table 14).

Table 14

Overall Influence of the 1994-1995 Indicators on TAAS and Attendance

	1994-1995 TAAS scores	1994-1995 attendance
Adjusted R^2	.72804	.53492
Corresponding % of influence	72.804%	53.492%

Summary

The purpose of this study was to determine which of the characteristics, as measured by the Academic Excellence Indicator System, influenced student achievement as indicated by TAAS scores and student attendance. The literature concerning these indicators was examined. Rarely was any substantial influence on achievement and attendance attributed to them. The data were obtained from state agency sources and, when a preliminary analysis was performed, found to be highly correlated. A principal component analysis was performed to group related indicators into factors. These were used in a multiple regression analysis to determine what manner of influence each had on the outcome variables (attendance, TAAS). The two strongest influences in 1993-1994 on TAAS scores were the previous year's attendance and campus demographics. Six factors

had over 1% of influence. For the 1993-1994 attendance, campus demographics and the previous year's attendance were again the most influential factors.

There was little change in the campus statistics in 1994-1995. The two most influential factors on TAAS scores were the previous year's attendance and campus demographics. Seven factors had more than 1% influence on the campus TAAS scores. For the 1994-1995 attendance, campus demographics and the previous year's attendance were also the most influential factors.

A critical examination of these findings is found in chapter 5. The factors and their components (variables) are examined and the two years' findings are compared. Consistencies in influence in both attendance and TAAS scores and consistencies between the two years are identified, and finally, there is a discussion of the implications of this research on middle school programs and planning.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

An examination of the characteristics of Texas middle schools has been conducted with the objective of developing a model for a successful middle school. This success is measured by the Academic Excellence Indicator System (AEIS), whose rating scale has three components: campus scores on the Texas Assessment of Basic Skills (TAAS), campus attendance percentages, and campus dropout rates. TAAS scores and attendance rates have been the focus of this study.

The Public Education Information Management System (PEIMS) is charged with the responsibility of gathering the information on all Texas campuses, including middle schools. Included among the information gathered by PEIMS is that concerning staff, students, finances, attendance, and TAAS scores. This information originates at the school district level, then is collected by the Regional Service Centers, and finally goes to the PEIMS center at the Texas Education Agency in Austin. These data, along with a campus rating of exemplary, recognized, acceptable, or low performing, are published in a campus report card and distributed to the schools, the public, and the media. This information is understood to have a direct connection with the success of the students, and therefore, to the success of the campus.

Many studies have been conducted on individual campus characteristics, or indicators. However, a comprehensive search of the literature resulted in only a few studies of school report cards. Most of these were done on a district level; however, some

parallels may be drawn between these studies and the present study. These studies examined the districts' characteristics by a variety of statistical methods, and all came to a similar conclusion. These characteristics did not account for a significant portion of student achievement.

The two years of data were examined separately for each research question. The large number of indicators, combined with the problem of multicollinearity, necessitated the use of principal component analysis. This operation reduced the number of indicators, or predictors, in both years' data to 20 factors. Each of these factors received a designation based on the characteristic that the component indicators had in common. A multiple regression analysis was performed on these factors to determine the influence each had on the campus TAAS scores and attendance.

The unpredictability of human subjects necessitates an additional step in this study to achieve valid conclusions. A comparison of the two years' results is made to discover any consistent influences in the campus TAAS scores and attendance. Summaries of both the individual years' results and discussion of those consistent influences on TAAS and attendance are the next parts of this chapter. Finally, recommendations for middle schoolplanning and further research complete the chapter.

Summary of the Findings

Research Question 1

Table 15 is a comparison between the factors influencing campus TAAS scores in 1993-1994 and 1994-1995. The factors for each year are ranked according to the size of their contribution. The percentage of each factors contribution is also in the table along with its sign.

Table 15

Comparison of the 1993-1994 and 1994-1995 Factors Influencing TAAS

Rank	1993-1994 Factor	%		1994-1995 Factor	%	
1	Campus demographics	29.428	-	Campus demographics	32.277	-
2	Attendance (last year)	21.682	+	Attendance (last year)	20.660	+
3	Teacher gender	5.337	+	Teacher gender	4.269	+
4	African American	4.172	-	African American	3.960	-
5	Gifted and talented	2.711	+	Student retention	3.873	-
6	ESL/bilingual	2.433	-	Gifted and talented	2.900	+
7	Retention	1.8	-	ESL/bilingual	2.162	-
8	Teacher experience	.8	+	Teachers 11- 20 yrs experience	.706	-
9	Student/teacher ratio	.537	+	Teacher/aide ratio	.704	+
10	Teacher/aide ratio	.445	+	Expenditures-other	.614	-
11	Campus size	.336	+	Teachers-6 to 10 yrs	.475	+
12	Expenditures-other	.203	+	Campus size	.2337	+
13	Grade configuration	.157	-	Grade configuration	.155	+
14	Comp/regular ed teachers	.153	-	Comp/regular ed teachers	.148	-
15	Grade 5	.151	-	Grade 5	.095	+
16	Vocational education	.083	+			
17	Teachers-6-10 yrs exp	.073	-			

Common factors include campus demographics, attendance (previous year), teacher gender, retention, gifted and talented, ESL/bilingual, teacher/aide ratio, grade

configuration, compensatory education/regular education teachers, Grade 5, expenditures-other, campus size, and teacher experience. An explanation and discussion of each of the factors follows.

Campus demographics. Campus demographics are the characteristics of the population on each campus. This factor had an overall negative influence on TAAS scores for both years. Most researchers (see chapter 2) agree that adverse socioeconomic conditions have a negative influence on student achievement (i.e., TAAS scores). Table 16 is a summary of the combined demographic factors for both years. (The state-wide middle school TAAS results for 1993-1994 and 1994-1995 may be seen in Appendix H.) Note the similarities in the percentages of each factor's influence, the indicators composing each factor, the factor loadings of each of the indicators, and the influence of each indicator.

Table 16

Campus Demographics

Variable	% 93-94	Loading		% 94-95	Loading	
	29.428 %			32.277 %		
Students-% white		-.81014	+		-.80560	+
Students-% Hispanic		.74665	-		.75020	-
Students-% econ disad		.71378	-		.72217	-
Teachers-white		-.79946	+		-.80048	+
Teachers-Hispanic		.77001	-		.75020	-
Teachers-minority		.82132	-		.76026	-
	4.172 %			3.960 %		
Students-African Am		.84661	-		.88888	-
Teachers-African Am		.80984	-		.80821	-

An examination of the data statistics in Appendix E shows the numbers of both Hispanic and African American teachers to be small in both years (Hispanic 9.82%, 10.13%; African American 8.12%, 8.13 %). Further, it can be shown that in 1993-1994, of the 771 campuses, 267 had no African American teachers, but only 37 campuses that reported no African American students. A similar situation occurs when the Hispanic teachers and students are examined. The white teachers outnumbered the combined minority teachers by a 4 to 1 margin. This disparity may contribute to the differences in the influences found in the analysis.

Campus attendance (previous year). Table 17 shows the results of the analysis regarding the previous year's attendance and its influence on present-year TAAS scores. This seems to bear out the old saying among teachers, "You can't teach 'em if they are not there." In almost complete agreement, research quoted in chapter 2 supports absenteeism as a negative influence on student achievement.

Even though mobile students are not counted in the overall campus score, logic dictates that there must be some drain on school personnel and resources when a student moving into a class late must be brought up to the level of the remainder of the other students. Adduci (1990) disagreed in his paper finding little impact on achievement from student mobility. However, the validity of this study is questionable, since the evaluation of different students moving in from different schools is very difficult. The short period of the study and the small population (Orange County, NJ) also bring questions. Only when a longitundal study was done (Parades, 1993) were any significant adverse effects uncovered.

Table 17

Campus Attendance (Previous Year)

Variable	% 93-94	Loading	% 94-95	Loading
	21.682 %		20.660 %	
Campus % attendance		.94195 +		.93465 +
Male % attendance		.91741 +		.90864 +
Female % attendance		.91109 +		.90046 +
Econ disadv % attend		.86443 +		.86093 +
Special ed % attend		.85643 +		.85132 +
White % attendance		.83369 +		.82737 +
Campus % mobile		-.54254 -		-.51902 -

Note: % 93-94 and % 94-95 are the percentages of contribution to the overall effect (outcome variable).

It was shown in chapter 3 that the previous year's campus attendance percentage was also the most powerful predictor of the present year's attendance. This present year's attendance becomes a powerful predictor of the following year's TAAS scores. This reinforces the assertion that attendance is vital in student achievement, and therefore, in the success of the campus.

Teacher gender. The results, as shown in Table 18, depict female teachers as superior to male teachers in the middle school with regard to student achievement. The equal and opposite factor loadings can be attributed to the fact that a member can be in only one of the two groups (male or female). Possible reasons for the greater influence of female teachers may lie in their teacher preparation (elementary versus secondary); the fact that most students entering middle school have been exposed to primarily female teachers in

elementary school; or the numbers of teachers in both groups and diversity in teaching assignments (coaches, shop, regular classroom).

Table 18

Teacher Gender

Variable	% 93-94	Loading	% 94-95	Loading
	5.337 %		4.269 %	
Teachers-% male		-.81695 -		-.78832 -
Teachers-% female		.81695 +		.78832 +

Gifted and talented program. This program is for students who perform at, or show the potential for performing at, a remarkably high level of accomplishment when compared to others of the same age, experience, or environment. The strength of this program on a campus can be measured by the indicators used in this study (see Table 19). The percentage of the factor's contribution to the campus TAAS scores are given along with the positive sign of influence of each of the indicators.

Typically, these students would score high on the TAAS and cause campus scores to rise. In addition, the presence of high achieving students in the regular classrooms could only improve school climate and help maintain high teacher expectation. Children could benefit from interacting with the gifted and talented children. By these students modeling for the others, the regular students may see higher achievement as a possibility.

Table 19

Gifted and Talented Program

Variable	% 93-94	Loading	% 94-95	Loading
	2.711 %		2.900 %	
Students		.73509 +		.72228 +
Teachers		.72925 +		.66795 +
Expenditures		.62988 +		.65446 +

Bilingual /English as a Second Language (ESL). This program identifies limited English proficient (LEP) students and provides a bilingual education and ESL programs to insure that LEP students are afforded full opportunity to master the essential skills and knowledge required by the state. (Linda Thomas, personal communication, June 25, 1997). These students' TAAS scores are not included in the campus TAAS percentage.

Middle school students in these programs are generally in special classes part of the day and regular classes during the remainder. They prompt use of techniques such as peer tutoring and cooperative learning in regular classrooms, which benefits all students. The bilingual and ESL students can benefit from the regular classroom experience by interaction with English-speaking students, exposure to content-oriented classroom materials, and contact with teachers specialized in the content area. The other students may gain from the multicultural insights that these students can contribute.

Any special needs students represent a drain on teacher time and materials. The negative side to the situation is that, without adequate support for both the regular classroom teachers and the bilingual and ESL students, these students might have an effect on regular classroom operations opposite to the gifted students. Instead of higher expectation levels, increased pace, and greater depth of instruction, the teacher might divert

attention to these students by modification of materials, differentiated instructional methods, and increased tutorial time.

Table 20

Bilingual/ESL Program

Variable	% 93-94	Loading	% 94-95	Loading
	2.433 %		2.162%	
Expenditures- %		.76843 -		.76738 -
Students- %		.74457 -		.72037 -
Teachers-%		.73713 -		.75969 -
Students-% LEP		.68632 -		.67695 -

Student retention: Research has shown student retention to be detrimental to the individual student unless it is accompanied by a remediation program (see Chapter 2). Retention has been shown by this study to have a negative effect of between 2% and 4 % on the TAAS scores of the entire campus (see Table 21). The signs on the indicators show all to be negative influences.

Students in Texas are normally not retained more than one year in Grades 5 through 8. When these students are deposited in the regular classroom, most understand that promotion or assignment to the next grade at the end of the year is highly probable. If modification of instruction is not done for these students, the tendency may be toward a lack of focus and boredom. They may become negative models for the other students and, often, discipline problems. All of this can consume the most valuable commodity in the classroom--time.

Table 21

Retention

Variable	% 93-94	Loading	% 94-95	Loading
	1.800 %		3.873 %	
Grade 7		.82273 -		.81410 -
Grade 8		.78773 -		.77698 -
(Special ed) Grade 7		.74945 -		.72819 -
(Special ed) Grade 8		.65991 -		.68159 -
(Special ed) Grade 6		.57162 -		.59845 -

Teacher/aide ratio. A negative influence of educational aides on campus TAAS scores was revealed in the analysis (see Table 22). Several reasons can be proposed for this. First, the tasks of educational aides are normally not instructional. They relieve the teachers from clerical tasks to allow them time for planning and instruction, and they assist in supervision of children during lunch and activity periods. The relatively small percentage of aides (5 %-6 %) versus the large percentage of classroom teachers (80 %) may also have contributed to the negative outcome.

Table 22

Teacher/Aide Ratio

Variable	% 93-94	Loading	% 94-95	Loading
	0.445 %		0.704 %	
% Educational aides		-.94790 -		-.92909 -
% Professional staff		.94790 +		.92909 +
% Teachers		.90728 +		.88525 +
Educational Aides		-.84114 +		-.82476 -

Campus grade configuration .The grade configuration of a campus is the grades served on that campus. However, the sixth grade is indicated as a negative influence on TAAS scores. These results suggest setting returning sixth grade to an elementary school setting. Since the impact is apparently small (see Table 23), a redesigned sixth-grade program at middle school to take care of this transition might be another alternative.

Table 23

Campus Grade Configuration

Variable	% 93-94	Loading	% 94-95	Loading
	0.157 %		0.155 %	
Students-% Grade 6		.87258 -		.87579 -
Students-% Grade 8		-.73613 +		-.78158 +
Students-% Grade 7		-.69908 +		-.71474 +
Ave retention-Grade 6		.62431 -		.67695 -

Campus size. The number of teachers, the total staff, the total professional staff, the size of the campus administration, total student enrollment, and total operating expenses are all dependent on the size of the campus. Increased campus size is shown by this study to be related to higher test scores (see Table 24). The larger budget and staff may indicate a more varied curriculum and more opportunities for special needs students.

The amount of resources diverted to noninstructional areas was found in this analysis to be related to lower TAAS scores. Total enrollment and total professional staff were related to higher TAAS scores. The result for the number of teachers was inconclusive. It may be hypothesized that this situation is related to the quality of instruction.

Table 24

Campus Size

Variable	% 93-94	Loading	% 94-95	Loading
	0.336 %		0.234 %	
Teachers		.68065 +		.78198 -
Total staff		.67867 +		.77863 +
Professional staff		.65973 +		.76428 +
Staff-% campus admin		-.69522 -		-.65130 -
Exp-% campus admin		-.74392 -		-.65934 -
Campus total enroll		.60517 +		.72115 +
Total operating exp		.58387 +		.69333 +

Expenditures (other programs): This factor's influence was inconsistent in two years' data. However, the influence of the indicators does remain consistent for both years in relation to the factor. And, as in the last example, expenditures not directly related to regular instruction show a negative influence (see Table 25).

Regular education expenditures form the majority of this factor (73 %-74 %), with the others significantly smaller (instructional administration , less than 1%; compensatory education, about 10 %). Instructional administration expenditures relate to the management and improvement of the quality of instruction and the curriculum. Compensatory education is assistance provided for educationally deprived students. The opposite signs of these factors may have also been influenced by the indicators representing resources spent outside of regular education or the disparity in amounts in these categories.

Table 25

Expenditures (Other Programs)

Variable	% 93-94	Loading	% 94-95	Loading
	0.203 %		0.614 %	
% Instructional admin		-.46599 -		.43038 -
% Compensatory ed		-.44477 -		.61725 -
% Regular education		.43565 +		-.65145 +

Compensatory/regular education. Compensatory education is assistance provided by the Title I program which provides financial assistance to state and local educational agencies to meet the needs of educationally deprived, at-risk children. By definition, these students are going to be academically behind the other students, so these students will have predictably lower TAAS scores. In addition, since compensatory education teachers made up only around 4% of the middle school teaching staffs, the difference in sizes of the populations may have affected the results (see Table 26).

Table 26

Compensatory/Regular Education Teachers

Variable	% 93-94	Loading	% 94-95	Loading
	0.153 %		0.148 %	
Teachers-% comp ed		.79813 -		.84627 -
Teachers-% regular ed		-.72678 +		-.66515 +

Grade 5. The presence of Grade 5 on the middle school campus shows its influence on the TAAS score for both years with opposite signs. This influence is present but inconclusive. Only a small percentage of 5th-grade students attend middle school campuses. Accordingly, the Grade 5 factor is present, but the small numbers of 5th-grade students led to a small percentage influence with an undetermined sign.

Table 27

Grade 5

Variable	% 93-94	Loading	% 94-95	Loading
	0.151 %		0.095 %	
Ave retention-Grade 5		.82398 -		.80104 +
Average retention		.71888 -		.72640 +
(sp ed)-Grade 5				
Students-% Grade 5		.71773 -		.72478 +

Research Question 2

The primary focus of this paper is student achievement (TAAS) since it is the primary factor in the Texas school report card. However, the previous year's campus attendance was shown to be a powerful predictor of present-year TAAS scores.

Table 28 is a comparison between the factors influencing campus student attendance in 1993-1994 and 1994-1995. The factors are ranked by the size of their contribution to the outcome variable (attendance), percentage of contribution is given, with the symbol in the last column representing the sign of the factor. The number of common influential factors (those in both years' results) in TAAS and student attendance is noteworthy.

Table 28

Comparison of the 1993-1994 and 1994-1995 Factors Influencing Attendance

Rank	1993-1994 Factor	%		1994-1995 Factor	%	
1	Attendance (previous year)	37.93%	+	Attendance (previous year)	40.251%	+
2	Campus demographics	4.057%	-	Campus demographics	4.336%	-
3	Teacher salary	2.376%	-	African American	1.600%	-
4	African American	1.609%	-	Retention	1.567%	-
5	Retention	1.364%	-	Vocational education	1.381%	-
6	Bilingual/ESL	0.776%	-	Teacher salary	1.360%	-
7	Gifted and talented	0.732%	+	Gifted and talented	1.265%	+
8	Special education	0.392%	-	Teacher gender	0.432%	+
9	Expenditures (other/instruction)	0.390%	-	Teachers (11-20 yrs experience)	0.361%	+
10	Grade configuration	0.383%	+	Special education	0.344%	-
11	Vocational education	0.364%	-	Teacher experience	0.241%	-
12	Teacher gender	0.262%	+	Bilingual/ESL	0.218%	-
13	Expenditures (other programs)	0.115%	+	Teachers (regular/ compensatory)	0.160%	+
14				Grade configuration	0.155%	+
15				Campus size	0.152%	+

Factors that influenced attendance both years were campus demographics, attendance (last year), teacher gender, retention, gifted and talented, ESL/bilingual, grade configuration,

teacher experience, teacher salary, vocational education programs, and special education programs. A discussion of the factors' influences on student attendance follows.

Campus demographics: Campus demographics are the characteristics of the students and teachers on each campus. This factor had an overall negative influence on TAAS scores both years. Note the similarities in Table 29 of the percentages of contribution to campus attendance, the indicators composing the factor, the factor loadings of each of the indicators, and the sign of the influence of each indicator. Although the African-American indicators loaded on a separate factor, they are reported here as part of the campus demographics.

Table 29

Campus Demographics

Variable	% 93-94	Loading		% 94-95	Loading	
	4.057%			4.336%		
Students-% white		-.81014	+		-.80560	+
Students-% Hispanic		.74665	-		.75020	-
Students-% econ dis		.71378	-		.72217	-
Teachers-white		-.79946	+		-.80048	+
Teachers-Hispanic		.77001	-		.75020	-
Teachers-minority		.82132	-		.76026	-
	1.609%			1.600%		
Students-African Am		.84661	-		.88888	-
Teachers-African Am		.80984	-		.80821	-

An examination of the data statistics in Appendix D shows the numbers of both Hispanic and African American teachers to be small in both years (Hispanic 9.82%, 10.13%; African

American 8.12%, 8.13 %). Further, it can be shown that in 1993-1994, of the 771 campuses, 267 had no African American teachers. But only 37 of the 771 campuses reported no African American students. A similar situation occurs when the Hispanic teachers and students are examined. The white teachers outnumbered the combined minority teachers by a 4 to 1 margin. This disparity may have influenced for the results of this analysis.

Campus attendance (previous year): Table 30 represents the previous year's attendance as the most powerful predictor of the present year's attendance. A community in which school is considered a worthwhile institution, with parents and students willing participants, will naturally show good attendance (Glasser, 1990; Mann & Inman ,1984; Rossmiller, 1987). These attitudes, both in the community and the school itself, do not often change radically from one year to the next. As the most powerful predictor, it is important to note the negative influence of the mobile student.

Table 30

Campus Attendance (Previous Year)

Variable	% 93-94	Loading	% 94-95	Loading
	37.930%		40.251%	
Campus % attendance		.94195 +		.93465 +
Male % attendance		.91741 +		.90864 +
Female % attendance		.91109 +		.90046 +
Econ disadv % attend		.86443 +		.86093 +
Special ed % attend		.85643 +		.85132 +
White % attendance		.83369 +		.82737 +
Campus % mobile		-.54254 -		-.51902 -

Teacher gender. Teacher gender influence (see Table 31) might be influenced by the ratio of female to male teachers being about 2 to 1. The equal and opposite factor loadings can be attributed to the fact that a member can be in only one of the two groups. The results indicated an overall positive influence of this factor with the female teachers have a stronger influence.

Table 31

Teacher Gender

Variable	% 93-94	Loading	% 94-95	Loading
	0.262 %		0.432%	
Teachers-% male		-.81695 -		-.78832 -
Teachers-% female		.81695 +		.78832 +

Gifted and talented program: The strength of this program on a campus can be measured by the indicators used in this study (see Table 32). These students may have a secondary effect by their influence on others and their teachers. The tone these students are capable of setting in the classroom can be translated into higher expectation levels for teachers, students seeing what other students can achieve (i.e., gifted students as role models), and, possibly, an increased pace in the classroom instruction. If classroom instruction is an interesting, worthwhile experience, parents and children will have an interest in good student attendance (Glasser, 1990; Mann & Inman ,1984; Rossmiller, 1987).

Table 32

Gifted and Talented Program

Variable	% 93-94	Loading	% 94-95	Loading
	0.732 %		1.265%	
Students		.73509 +		.72228 +
Teachers		.72925 +		.66795 +
Expenditures		.62988 +		.65446 +

Bilingual /English as a Second Language (ESL): Language problems and differences in culture may often discourage these students' attendance (see Table 33). An increased emphasis in this area in instructional modification, outside assistance in the classroom, and counseling for students are ways in which both the attendance and TAAS scores may be improved.

Table 33

Bilingual/ESL Program

Variable	% 93-94	Loading	% 94-95	Loading
	0.776%		0.218%	
Expenditures- %		.76843 -		.76738 -
Students- %		.74457 -		.72037 -
Teachers-%		.73713 -		.75969 -
Students-% LEP		.68632 -		.67695 -

Student retention. Retention has been shown by this study (see Table 34) to have a negative effect on attendance for the entire campus. Students are normally not retained more

than one year in Grades 5 through 8. When these students are placed in the regular classroom, most understand that promotion or assignment to the next grade at the end of the year is highly probable. When a student is repeating the same material and doing no better with it, his or her attendance is discouraged (see chapter 2). A remedial program for these students is indicated both for TAAS and attendance improvement.

Table 34

Retention

Variable	% 93-94	Loading	% 94-95	Loading
	1.364 %		1.567 %	
Grade 7		.82273 -		.81410 -
Grade 8		.78773 -		.77698 -
(Special ed) Grade 7		.74945 -		.72819 -
(Special ed) Grade 8		.65991 -		.68159 -
(Special ed) Grade 6		.57162 -		.59845 -

Teacher salary and experience Texas teachers are paid based on experience and degrees earned. Therefore, there is a positive relationship between these two areas, and they are discussed together (see Table 35). Although many of the same indicators loaded on a factor both times, some were split between two factors.

Teacher salary was shown to be a negative influence on attendance while experience was shown as a positive one in 1994-1995. Experience did not have an influence in the 1993-1994 attendance in this study. When the relationship of experience and salary are considered, the results on this part must be considered inconclusive.

Table 35

Teacher Salary and Experience

Variable	% 93-94	Loading	% 94-95	Loading
	2.376 %		1.360%	
Ave salary 1-5 yrs exp		.88197 -		.86970 -
Ave salary 11-20 yrs		.86944 -		.83654 -
Average salary (base)		.83674 -		.84140 -
Ave salary > 20 yrs		.79720 -		.81517 -
Ave salary 6-10 yrs		.79145 -		.73322 -
Average salary zero yrs		.74047 -		.78291 -
Students-% other eth		.39920 -		n/a
Staff-% prof support		.37615 -		.38168 -
Ave salary campus administration		n/a		.66283 -
Ave professional support salary		n/a		.62688 -
Student/teacher ratio		n/a		.38074 +
Students-% Pacific Is		n/a		.49675 -
Teachers 11-20 yrs exp	n/a	n/a	0.706 %	-.77943 +
Teachers 6 to 10 yrs exp	n/a	n/a	0.475 %	.90936 +

n/a means this was not an indicator that loaded with the factor in the year in question.

Vocational education. A vocational education program provides sequences of courses designed for a career (Linda Thomas, personnel communication, June 25, 1997). These programs benefit a number of students in middle school. However, this factor is difficult to interpret completely because teacher classifications are based on budgeted salaries in that program. It is common to have a teacher with a vocational class being paid from regular budget funds in middle school (Theresa McMaster, personal communication, May 14, 1997). This began several years ago when the state's vocational money began to diminish. Middle school courses were the first to lose vocational funding. The vocational programs factor shows a negative influence on attendance, as do its component indicators (see Table 36). The loading of the Grade 9 indicator in this factor might be explained by vocational teacher salaries for this level being paid from vocational funds.

Table 36

Vocational Education

Variable	% 93-94	Loading	% 94-95	Loading
	0.364 %		1.381 %	
Teachers-%		.72157 -		.72086 -
Students-%		.70334 -		.70358 -
Expenditures-%		.67999 -		.63520 -
Students-% Grade 9		.44899 -		.60609 -

Special education. Special education programs are designed for any student not performing academically, emotionally, or physically in the range considered normal for his or her age level. This program has a slight negative impact on campus attendance (0.3 % to 0.4 %). These data do not show the specific attendance of the special education student or

whether any of the absences involved were directly related to disabilities. Accordingly, it is not possible to draw a conclusion from this result (see Table 37).

Table 37

Special Education

Variable	% 93-94	Loading	% 94-95	Loading
	0.392 %		0.344 %	
Expenditures-%		.81967 -		.81697 -
Teachers-%		.81407 -		.81790 -
Students-%		.68009 -		.66341 -

Research Question 3

The total variance in the campus TAAS that could be attributed to predictors was around 70 % for both the 1993-1994 and 1994-1995 school years. Literature cited in chapter 2 gave varying percentages for similar predictors' influence on student achievement. None of the studies resulted in percentages over 53%. All made a similar statement about where the remaining variance resided. The studies suggested examination of school climate, leadership styles, school programs, staff morale, and other qualitative factors.

The indicators accounted for only about 50 % of the variance of the campus attendance. This was disappointing because attendance relates highly to TAAS and the next year's attendance. A similar investigation of other possible qualitative factors is suggested.

Implications of the Findings

The success of Texas public school campuses is largely measured by scores on the Texas Assessment of Academic Skills (TAAS), student attendance, and dropout rates. In this study the TAAS and attendance rates, along with a variety of campus indicators, were analyzed to determine critical factors in successful middle schools. Two years were examined, with a comparison between the two years to find factors that consistently influenced the outcomes (TAAS, attendance).

Factors influencing student TAAS scores were campus demographics, attendance (previous year), teacher gender, student retention, gifted and talented programs, ESL/bilingual programs, teacher/aide ratio, campus grade configuration, compensatory education teachers, Grade 5, campus size, and teacher experience. Factors solely influencing attendance were teacher salary, vocational education programs, and special education programs. Factors that influenced attendance and TAAS scores for both years were campus demographics, attendance (last year), teacher gender, retention, gifted and talented, ESL/bilingual, and grade configuration. These results prompted the following similar recommendations:

1. Economically disadvantaged and minority groups should be targeted in middle school for specific TAAS and attendance improvement strategies. They should be made to feel "a part of the school" instead of an "outsider." The students in this group can benefit from the numerous at-risk programs present in Texas schools (Glasser, 1990; Mann & Inman, 1984; Rossmiller, 1987).

2. A strong gifted and talented program should be maintained in the middle school to serve as a positive influence on school climate and expectations.

3. Special programs for (ESL, bilingual, special education) students should continue to be supported to make school a worthwhile experience. Regular classroom teachers need increased assistance with these students to achieve this goal.

4. Teacher tenure, in the studies cited, is defined as average teacher service time on the campus. The campus report card reports teacher tenure as the time the teacher has spent in the school district. Since the studies cited rate teacher tenure as a undisputed positive influence on student achievement, it is recommended the definition of teacher tenure be changed to service time on the campus.

5. Retention in the elementary school must be examined due to research indication of negative consequences for middle school students. Alternative programs should be investigated for elementary students who would have been retained.

6. Retention during the middle school years has been shown by this study to be an adverse influence on campus TAAS scores and attendance. The retention policies at middle schools must be replaced by ones that offer students remediation and an opportunity to rejoin their peers (see chapter 2).

7. This study has shown Grade 6 to have a negative influence on campus achievement and attendance. Middle schools who have a Grade 6 component should examine their program and adopt policies and procedures, if needed, more congruent with the 12-year-old developmental stage.

Recommendations for Further Research

Replication of this study using 1995-1996 data and 1996-1997 data (when available) is a necessary step for further validation of the results of this study. An examination of three years (or more) of data can only demonstrate whether these findings will stand the test of time.

Specific groups have had low TAAS scores in the two years' data in this study. The purpose of this study was improvement of campus student achievement and attendance. Using the methodology developed in chapter 3 and these groups' TAAS scores and

attendance as outcome variables, it should be possible to isolate specific indicators for campus planning committees' attention.

The studies cited in chapter 2 suggested examination of school climate, leadership styles, school programs, staff morale, and other qualitative factors to explain the remaining variance. Although this study attributed about 70 % of the variance in student achievement and 50 % of the variance in attendance to the indicators in the report cards, a similar recommendation is made here.

APPENDIX A

TEXAS ASSESSMENT OF ACADEMIC SKILLS

(TAAS)

TEXAS EDUCATION AGENCY

Technical Digest

Chapter 1 - "Background"

The goal of the assessment program in Texas is to measure student progress toward achieving academic excellence. The primary purpose of the state student assessment program is to provide an accurate measure of student achievement in the areas of reading, writing, mathematics, social studies, and science to be used as a gauge for institutional accountability.

Statewide Student Assessment in Texas

For ten years, as required by state statute, Texas assessed minimum basic skills in reading, mathematics, and writing, first with the Texas Assessment of Basic Skills (TABS) tests and then with the Texas Educational Assessment of Minimum Skills (TEAMS) examinations. In fall 1990, changes in state law required the implementation of a new criterion-referenced program, the Texas Assessment of Academic Skills (TAAS).

The implementation of TAAS shifted the focus of assessment in Texas from

minimum skills to academic skills. The TAAS tests represent a more comprehensive assessment of the instructional targets delineated in the essential elements. Moreover, the TAAS tests assess higher-order thinking skills and problem-solving ability. In addition, the state has further stipulated that end-of-course tests be developed for selected high school courses.

Since the implementation of the TAAS program, several shifts have occurred in the grades tested and several new assessments have been developed as a result of changes in legislative requirements or actions by the State Board of Education (SBOE).

* In fall 1990 and fall 1991, TAAS was administered to students in Grades 3, 5, 7, 9, and exit level.
* The 1992-1993 school year was a transition year for the testing program. TAAS was given to students in Grades 3, 7, and exit level in the fall of 1992 and to students in Grades 4, 8, and exit level in the spring of 1993.
* In the spring of 1994, the TAAS reading and mathematics assessments were administered to students in Grades 3, 4, 5, 6, 7, 8, and exit level and the TAAS writing tests were administered at Grades 4, 8, and exit level. Also, science and social studies assessments at Grades 4 and 8 and the end-of-course tests for Biology I and Algebra I were benchmarked. During a benchmark administration, all eligible students are assessed and receive objective-level scores and a raw score for the

total test; however, no pass/fail information is provided. The SBOE uses the benchmark test data in its standard-setting process.

* In December 1994, the Biology I end-of-course examination was administered to students who had completed Biology I at the end of the fall semester.
* In the spring of 1995, TAAS reading, mathematics, and writing assessments were administered at the same grade levels as the previous year. Science and social studies were assessed at Grade 8 only. Also in the spring of 1995, the Biology I end-of-course test was administered to eligible students and the Algebra I end-of-course exam was re-benchmarked as a more comprehensive and rigorous test. In the fall of 1995, these two end-of-course tests were administered to eligible students.
* In the spring of 1996, the Spanish versions of the TAAS Grades 3 and 4 reading and mathematics tests were benchmarked. Also in the spring 1996, the Spanish versions of the TAAS Grades 5 and 6 reading and mathematics and the Grade 4 writing assessments were field-tested.

Texas Education Code

In November 1995, the State Board of Education adopted new rules for student assessment which included provisions enacted in Senate Bill 1. These rules are now in effect and comprise the new Texas Administrative Code (TAC) Chapter 101. During 1995-1996, an individual was required to meet minimum expectations on each section of the exit level examination in order to be

eligible to receive a high school diploma. The law provided that any student not meeting minimum expectations on the exit level TAAS test may retake those sections of the assessment instrument on which the pupil had not performed satisfactorily. The Texas Administrative Code stated that no exit level student would be required to demonstrate subject-area performance at a standard higher than the one in effect at the time the student was first eligible to take the test. Thus, the exit level TAAS and TEAMS tests continued to be available for eligible students both in and out of school. In 1995-1996, the TAAS exit level exam was administered initially to tenth graders in the spring of their sophomore year, and exit level examinees had a total of eight opportunities to pass the test before graduation. The exam was offered in July to any student who was eligible to test in the spring. Sections of the Texas Education Code that were in place for the 1995-1996 school year and applied to student assessment and performance indicators for the accountability system are included in Appendix 1.

Texas Administrative Code

The statewide testing program is governed by the Texas Administrative Code, which contains rules adopted by the State Board of Education. Appendix 2 contains the version of Chapter 101 of the Texas Administrative Code that was in place beginning on January 1, 1996.

Appropriate Uses for Scores and Reports

As with any assessment instrument that records the progress of students in a snapshot, the scores from these assessment instruments must be used appropriately if they are to provide a valid indicator of student performance. All test result uses regarding individual students or groups should incorporate as much data as possible. Likewise, the reports developed for use in an assessment program must be clear, understandable, and contain a broad array of information to facilitate their use.

State statute requires that the State Board of Education adopt a set of indicators for determining the quality of learning on a campus. Included in those indicators are test results from the statewide student assessment program. The TAAS and end-of-course tests are based on these premises:

* The tests are grounded in the Texas essential elements and reflect those skills in a manner congruent with sound instructional practice.
* Information about the content, level of expectation, and structure of the tests is based on judgments made by Texas educators, students, and the public.
* Texas educators guide all phases of test development.
* Test results are useful for providing a snapshot of individual student performance, an indicator of areas in which further diagnosis is warranted, and a mechanism for providing a "level playing field" for comparing the performance of campuses and districts.

The Texas Education Agency (TEA) designs the reports of student performance data to provide information about student achievement. This information may be used in a variety of ways, some of which are outlined here.

* Reporting results to parents of individual students. The test reports contain information about the student's scores in relation to the passing standards, the content areas in which the student may need remedial instruction, the specific skills in which further diagnosis is indicated, and the student's performance in comparison with the performance of his or her peers. This information can help parents more fully understand their child's achievement.
* Reporting results to the local school board, school professionals, and the community. Although individual students' scores are confidential by law, reports of group (aggregated) scores are considered public record. However, if the specific group (e.g., limited English proficient students) contains fewer than five students, scores are not included in reports in order to protect student confidentiality.
* Evaluating student scores for use in placement decisions. Remedial instruction is required by state law for students exhibiting difficulty with skills on the TAAS tests. Student test scores should also be used in conjunction with other performance indicators to assist in making placement decisions, such as whether a student should take a reading improvement course, be placed in a gifted and talented program, or exit a bilingual program.

* Evaluating programs, resources, and staffing patterns. Districts may use campus and district test scores in evaluating a particular program or a particular resource or staffing pattern. For example, a campus may use its scores to evaluate its improvement in an at-risk program or to assess the need to focus resources and staff on a particular group of students.
* Evaluating district and campus curriculum and instruction. Since the tests are designed to measure the essential elements for reading, writing, mathematics, science, and social studies, considering performance results by subject area and by objective may be helpful when evaluating curriculum and instruction. Generalizations from student scores may be made to the specific content domain represented by the objective or set of objectives being measured on the exam. However, because the tests are measuring a finite set of skills with a limited set of item types, generalizations should be made only to student achievement as measured on a particular test.

Organizations and Groups Involved

A number of groups and organizations are involved with the Texas assessment program. Each of the major contributors listed below serves a specific function, and their collaborative efforts contribute significantly to the program's success.

The Texas Education Agency

The Student Assessment Division of the Texas Education Agency has the responsibility of carrying out the provisions of the Texas Education Code and the State Board of Education policies regarding the statewide assessment in Texas. The Student Assessment Division oversees the planning, scheduling, and implementation of all major assessment activities and supervises the agency's current contract with National Computer Systems (NCS). In addition, TEA staff conduct quality control activities for every aspect of the development and administration of the assessment program. The Texas Education Agency is also active in monitoring the security provisions of the assessment program.

National Computer Systems

National Computer Systems has been TEA's primary contractor for the provision of support services to the statewide assessment program since September 1981. Because of the diverse nature of the services required, NCS employs subcontractors to perform tasks requiring specialized expertise. NCS's current subcontractors are Harcourt Brace Educational Measurement (HBEM) for test development and Measurement Incorporated (MI) for handscoring open-ended items, such as the written composition.

In the 1995-1996 school year, approximately 2.6 million Texas students

participated in the testing program. NCS distributed test materials to approximately 1,100 school districts and 5,500 campuses in Texas and was responsible for the security of approximately 4 million test booklets. For each grade level and each major test administration, NCS printed over 300,000 test booklets and over 400,000 answer documents. In addition, NCS produced ancillary testing materials including test administration manuals and training videotapes, interpretive guides, report folders, scannable identification sheets, packing lists, report samples, report order forms, return shipping labels, freight bills, and security forms. NCS scored all student answer documents and prepared and distributed standard and optional reports.

NCS also shipped over 440,000 released test booklets to school districts and education service centers in August of 1996.

Harcourt Brace Educational Measurement

Harcourt Brace Educational Measurement (HBEM) was first associated with the development of statewide tests in Texas beginning with TABS and then again with the TAAS program. As a subcontractor to NCS, HBEM works with TEA staff members and other Texas educators to produce academic skills tests for the TAAS program as well as for the end-of-course assessments. In addition, HBEM provides advice and guidance to the advisory committees that participate in item and data reviews, and technical assistance to the assessment program as a whole.

Measurement Incorporated

Since 1986 Measurement Incorporated (MI) has conducted the handscoring of the TAAS written compositions and other open-ended items for the Texas assessment program as a subcontractor to NCS. MI scored more than 1 million written compositions for the TAAS writing assessment for Grades 4, 8, and exit level (Grades 10, 11, and 12) during 1995-1996 school year. Measurement Incorporated also scored more than 10,000 written compositions for the Spanish version Grade 4 writing test.

Measurement Incorporated collaborates with TEA on all facets of the writing assessment, including the selection of writing prompts and the training of scoring supervisors. In addition, MI recruits and hires scoring personnel, trains group leaders, coordinates the shipping and handling of student papers, maintains security, and transmits scoring data to the NCS-Iowa City scoring center.

Texas Educators

Texas educators, including classroom teachers, curriculum specialists, administrators, and education service center staff play a vital role in all phases of the test development process. Committees of Texas educators review the essential elements of curriculum to develop appropriate objectives and instructional targets (skills) for a specific grade and/or subject test and

provide advice on a model or structure for assessing the particular subject that aligns closely with good classroom instruction. Draft objectives are widely distributed for review by teachers, curriculum specialists, assessment specialists, and administrators. Committees of Texas educators assist in developing draft measurement specifications that outline the eligible test content and test item formats. TEA refines and clarifies these draft objectives and specifications based on input from Texas educators. Following the development of test items by professional item writers, many of whom are Texas teachers, committees of Texas educators review the items to judge appropriateness of content and difficulty and to eliminate potential bias. Items are revised based on input from these committee meetings. Items are then field tested, and Texas educator committees are convened to review each item and associated data for appropriateness for inclusion in the item banks from which the test forms are built.

Between the time of the implementation of TAAS and August 1996, more than 4,600 Texas educators had served on one or more of the educator committees involved in the development of the TAAS and end-of-course tests.

Texas Education Agency (TEA)

Division of Student Assessment

Phone: (512) 463-9536 Last Update - February 26, 1997

APPENDIX B

PUBLIC EDUCATION INFORMATION SYSTEM

(PEIMS)

Texas Education Agency

Public Education Information Management System (PEIMS)

PEIMS (Public Education Information Management System) is a state-wide data management system for public information in the State of Texas. One of the basic goals of PEIMS, as adopted by the State Board of Education in 1986, is to improve education practices of local school districts. By collecting detailed data from school districts and presenting this data in logically organized views of education, we can enhance our ability to support and respond to student needs. It is now possible to identify local districts and programs that are exemplary, as well as those that are in need of attention. PEIMS is a major improvement over previous information sources gathered from aggregated data available on paper reports.

School districts submit their data via standardized computer files, which are defined by a yearly publication, the PEIMS Data Standards. Technical support for gathering the data from district databases is supplied by one of the twenty educational service centers (ESCs) or by private vendors. A software system of standard edits, to enhance the quality of data, is used by ESCs and again by the agency on district data submissions. Currently, the major categories of data collected are: organization data; budget data; actual financial data; staff data; student demographic and program

participation data; student attendance and course completion data; dropout data and graduate information.

PEIMS data can be used by districts and other clients for internal analysis and for state-wide comparisons. many agency clients use PEIMS as a rich source of information about Texas schools and students. Published aggregations, such as SNAPSHOT, are used increasingly for policy and decision development. The PEIMS project is also playing an important role in improving the state-wide accreditation process by using a performance-based accountability and evaluation system. This is in evidence with the Academic Excellence Indicator System (AEIS), which uses PEIMS as a primary source of information. In addition to providing a central source for obtaining data required for state and federal reporting purposes, the detailed data base is constantly being used to answer important policy questions.

Texas Education Agency (TEA)

Divsion of Planning and Strategic Services, (512) 475-3595

Last Update - Feburary 20, 1997

APPENDIX C

SUMMARY OF SCHOOL REPORT

CARD RESEARCH

Summary of School Report Card Research

Researchers	Teeter et al.	Bobbett et al	Bobbett et al	Bobbett et al	Mathews,et al	Bobbett,et al	Bobbett,et al	Bobbett,et al
Date	1983	1992b	1992c	1993	1995	1994	1995	1996
Level	District	Middle	Middle	District	District	Middle	High	District
State	Arkansas	Tenn	Tenn	Tenn	Mississippi	Arkansas	Texas	Texas
Total % variance	12%	26.50%	35.30%	n/a	41.3% 53%	15%	7.80%	n/a
African Ame						-		-
Attendance			+			+	+	
Bilingual/ESL								-
Central office								-
Class size	+							
Cost per pupil	+		+	+				
Econ disadv		-		-		-	-	-
Free lunches (%)		+						
Local tax effort	+							
Minority								-
Retention						-		
Student/teacher					+	+		
Teacher salary	+	+						
Teacher training		+			-			-
Tenure							+	

"+" equals a positive influence. "-" equals a negative influence

APPENDIX D

DATA LAYOUT FILES

Data Layout Files

CAMP:PROGRAM-%-REGULAR EXPEND.
CAMP:PROGRAM-%-BILINGUAL EXPEND.
CAMP:PROGRAM-%-COMPENSATORY EXPEND.
CAMP:PROGRAM-%-GIFTED/TALENTED EXPEND.
CAMP:PROGRAM-%-VOCATIONAL EXPEND.
CAMP:PROGRAM-%-SPECIALEDUCATION EXPEND
CAMP:EXP-TOTALOPERATING
CAMP:EXP-%-INSTRUCTIONFUNCTION
CAMP:EXP-%-INSTRUCTIONAL ADMIN. FUNCT.
CAMP:EXP-%-CAMPUS ADMIN. FUNCTION
CAMP:EXP-%-OTHER FUNCTION
CAMPUS % ATTENDANCE-(PREVIOUS YEAR)
WHITE % ATTENDANCE-(PREVIOUS YEAR)
FEMALE % ATTENDANCE-(PREVIOUS YEAR)
ECON.DIS % ATTENDANCE-(PREVIOUS YEAR)
SPEC.ED % ATTENDANCE-(PREVIOUS YEAR)
CAMP:TCHR AVERAGE YEARS TENURE
CAMP:TEACHER FTE
CAMP:EDUCATIONAL AIDE FTES
CAMP:PROFESSIONAL STAFF FTE
CAMP:AVERAGE TEACHER SALARY (BASE)
CAMP:AVERAGE BEGINNING TCHR SALARY
CAMP:AVERAGE TCHR SALARY 1-5 YR EXPER
CAMP:AVERAGE TCHR SALARY 6-10 YR EXPER
CAMP:AVERAGE TCHR SALARY 11-20 YREXPER
CAMP:AVERAGE TCHR SALARY>=20 YR EXPER
CAMP: TCHR AVERAGE YEARS EXPERIENCE
CAMP:TOTAL STAFF FTE
CAMP:AVERAGE CAMPUS ADMIN.SALARY
CAMP:AVERAGE PROF.SUPPORT SALARY
CAMP:PCT TEACHERS
CAMP:PCT PROF.SUPPORT
CAMP:PCT CAMPUS ADMINISTRATORS
CAMP:PCT EDUCATIONAL AIDES
CAMP:PCT PROFESSIONAL STAFF
CAMP:PCT MINORITY STAFF (OF TOTAL STAFF)
CAMP:PCT TCHR W ZERO YRS EXPER
CAMP:PCT TCHR W 1-5 YRS EXPER
CAMP:PCT TCHR W 6-10 YRS EXPER
CAMP:PCT TCHR W11-20 YRS EXPER
CAMP:PCT TCHR W>=20 YRS EXPER
CAMP:PCT REGULAR TCHR
CAMP:PCT VOCATIONAL TCHR
CAMP:PCT BILINGUAL/ESL TCHR
CAMP:PCT COMPENSATORY TCHR

(table continues)

CAMP:PCT GIFTED/TALENTED TCHR
CAMP:PCT SPECIAL ED. TCHR
CAMP:PCT WHITE TEACHERS
CAMP:PCT BLACK TEACHERS
CAMP:PCT HISPANIC TEACHERS
CAMP:PCT MALE TEACHERS
CAMP:PCT FEMALE TEACHERS
CAMP:PCT NATIVE AMERICAN TEACHER*
CAMP:PCT PACIFIC ISLANDER TEACHER*
CAMP: STUDENT/TEACHER RATIO
CAMP:SPE EDUC GRADE 5 RETENTION AVERAGE
CAMP:SPE EDUC GRADE 6 RETENTION AVERAGE
CAMP:SPE EDUC GRADE 7 RETENTION AVERAGE
CAMP:SPE EDUC GRADE 8 RETENTION AVERAGE
CAMP:REG EDUC GRADE 5 RETENTION AVERAGE
CAMP:REG EDUC GRADE 6 RETENTION AVERAGE
CAMP:REG EDUC GRADE 7 RETENTION AVERAGE
CAMP:REG EDUC GRADE 8 RETENTION AVERAGE
CAMP:TOTALENROLLMENT
CAMP:PCT WHITE STUDENTS
CAMP:PCT BLACK STUDENTS
CAMP:PCT HISPANIC STUDENTS
CAMP:PCT NATIVE AMERICAN*
CAMP:PCT PACIFIC ISLANDER STUDENTS*
CAMP:PCT ECONOMICALLY DISADV. STUDENTS
CAMP:PCT LIMITED ENG.PROFICIENT STUDNT
CAMP:PCT SPECIAL ED. STUDENTS
CAMP:PCT VOCATIONAL ED. STUDENTS
CAMP:BILINGUAL ED STUDENTS
CAMP:PCT GIFTED/TALENTEDED. STUDENTS
CAMP:PCT STUDENTS GRADE 5
CAMP:PCT STUDENTS GRADE 6
CAMP:PCT STUDENTS GRADE 7
CAMP:PCT STUDENTS GRADE 8
CAMP:PCT STUDENTS GRADE 9
CAMPUS -% PASS ALL-SUM 3810-(PRESENT YEAR)

* The 1993-1994 data had these categories combined under "PCT OTHER ETHICITY" for both the student and faculty information. This results in a total of 79 indicators for the 1993-1994 school year.

APPENDIX E

A SUMMARY OF DATA CHARACTERISTICS

Summary of Data Characteristics 1993-1994

Variable	Mean	Std. Dev.	Range	Label
FI93_10	1.28	2.48	22.7	% Bilingual Expeditures
FI93_11	9.47	8.46	96.1	% Compensatory Expeditures
FI93_12	2.12	3.95	44.1	% Gifted and Talented Expeditur
FI93_13	1.41	2.03	11.7	% Vocational Expeditures
FI93_14	10.93	4.9	31.6	% Special Education Expeditures
FI93_19	2247977.0 1	1176.44	5919144	Total Operating Expenses
FI93_20	74.21	7.23	67.2	% Expeditures Instruction
FI93_21	0.14	0.56	10.3	% Exp Instructional Adm
FI93_22	8.11	1.94	16.8	% Expeditures Campus Adm
FI93_23	17.54	7.22	68.8	% Expeditures Other
FI93_9	74.78	10.75	99.9	% Regular Expenditures
OT93_10	94.95	1.76	36.1	% Female Attendance 1993
OT93_11	94.95	1.91	36	% Male Attendance 1993
OT93_12	94.27	1.88	35.2	% Econ Disadvantaged Attendance
OT93_13	93.01	2.4	30.6	Special Ed % Attendance 1993
OT93_6	94.95	1.82	36	% Campus Attendance 1993
OT93_9	94.92	2.24	41.4	% White Attendance 1993
SF93_6	28087.15	2183.28	13709	Average Teacher Salary (Base)
SF93_12	21481.82	2637.25	28165	Average Beginning Teacher Salar
SF93_13	23471.28	1843.27	9639	Average Teacher Salary 1-5 Yrs
SF93_14	27489.31	1636.26	15239	Teacher Average Salary 6-10 yrs
SF93_15	30858.49	1932.83	12752	Average Teacher Salary 11-20 Yr
SF93_16	35220.98	3398.56	23181	Average Teacher Salary over 20
SF93_5	52.53	21.34	123.9	Professional Staff
SF93_3	46.21	18.85	114.6	Teachers
SF93_38	79.74	5.72	39.3	% Teachers
SF93_39	6.64	2.43	27.3	% Professional Support
SF93_4	5.29	4.07	27.5	Educational Aides
SF93_40	4.22	1.3	10.4	% Campus Administrators
SF93_41	9.41	5.91	27.4	% Educational Aides
SF93_42	90.59	5.91	27.4	% Professional Staff
SF93_43	21.11	22.13	96.6	% Minority Staff (of total staff)
SF93_44	9.01	5.74	33.9	% Zero years experience teacher
SF93_45	26.96	8.83	56.4	% Teachers 1-5 yrs experience
SF93_46	18.5	6.62	43.2	% Teachers 6-10 yrs experience
SF93_47	29.84	8.59	54.9	% Teachers with 11-20 years exp
SF93_48	15.7	7.33	49.3	% Teachers with 20+ years exp

(table continues)

Variable	Mean	Std. Dev.	Range	Label
SF93_49	78.69	10.24	76.2	% Regular Teachers
SF93_50	1.91	2.11	10.4	% Vocational Teachers
SF93_51	1.78	3.75	52.2	% Bilingual Teachers
SF93_52	3.88	5.37	51.4	% Compensatory teachers
SF93_53	2.41	3.35	40	% Gifted and Talented Teachers
SF93_54	9.08	4.58	50.5	% Special Education Teachers
SF93_55	2.25	4.48	48.5	% Other Teachers (Honors/Migrant)
SF93_56	81.57	21.18	96.7	% White Teachers
SF93_57	8.12	13.57	87.1	% Black teachers
SF93_58	9.82	17.99	95	% Hispanic Teachers
SF93_59	0.49	1.14	10.3	% Other Eth Teacher
SF93_60	29.35	9.71	60.8	% Male Teachers
SF93_61	70.65	9.71	60.8	% Female Teachers
SF93_62	15.97	2.15	17.4	Student/Teacher Ratio
ST93_12	746.78	330.42	1918	Total Campus Enrollment
ST93_160	0.3	4.03	100	Special Ed Average Retention Gr 5
ST93_161	2.95	8.21	100	Special Ed Average Retention Gr 6
ST93_162	3.98	7.21	50	Special Ed Student Retention Av 7
ST93_163	3.36	6.66	47.4	Special Ed Average Retention Gr 8
ST93_169	0.19	1.17	17.7	Regular Ed Retention Average Gr 5
ST93_170	2.99	5.35	66.7	Regular Ed Average Retention Gr 6
ST93_171	4.04	5.19	26.3	Regular Ed Average Retention Gr 7
ST93_172	3.18	4.53	26.4	Regular Ed Average Retention Gr 8
ST93_33	52.69	28.59	98.2	% White Students
ST93_34	14.19	17.58	92.7	% Black Students
ST93_35	31.02	28.51	99.4	% Hispanic Students
ST93_36	2.09	3.29	26.9	% Other Students
ST93_37	41.59	21.69	98.4	% Econ Disadvantaged
ST93_38	6.68	10.45	69.1	% LEP Students
ST93_39	11.86	3.65	24.6	% Special Education Students
ST93_40	11.14	13.33	67.2	% Vocational Ed Students
ST93_41	5.38	8.9	63.9	% Bilingual Ed Students
ST93_42	9.34	6.14	65.6	% Gifted and Talented Students
ST93_50	3.26	11.06	62.6	% Students Grade 5
ST93_51	26.09	19.62	100	% Students Grade 6
ST93_52	35.21	13.62	100	% Students Grade 7
ST93_53	33.6	13.28	100	% Students Grade 8
ST93_54	1.73	7.66	51.8	% Students Grade 9
ST93_58	18.31	6.69	68.1	% Mobile Students
TA93_3	54.1	15.09	86.1	Campus TAAS % 1994

Summary of Data Characteristics 1994-1995

Variable	Mean	Std. Dev.	Range	Label
FI95_9	73.54	11.48	99.3	% Regular Expenditures
FI95_10	1.37	2.8	40.6	% Bilingual Education
FI95_11	10.32	9.2	98.8	% Compensatory Education
FI95_12	2.08	3.75	39.6	% Gifted and Talented Ed
FI95_13	1.41	2.09	10.4	% Vocational Education
FI95_14	11.28	4.8	37.3	% Special Education
FI95_19	2426227.01	59101.28	6208627	Total Operating Expenses
FI95_20	73.77	6	41.9	% Instruction Function
FI95_21	0.08	0.41	8.4	% Instructional Administration
FI95_22	8.08	1.88	18.7	% Campus Administration
FI95_23	18.07	6.03	38.6	% Expenditures (Other)
OT95_69	95.14	1.79	36.2	Campus % Attendance 1994
OT95_72	95.14	2.3	45.7	White % Attendance 1994
OT95_75	95.18	1.69	34.3	Female % Attendance
OT95_76	95.11	1.9	36.7	Male % Attendance 1994
OT95_77	94.48	1.8	34.2	Econ Disadvantaged % Attendance
OT95_78	93.17	2.41	34.3	Special Ed Attendance % 1994
SF95_6	28542.83	2238.36	13944	Average Teacher Salary (Base)
SF95_12	21687.01	2760.43	25289	Average Teacher Beginning Salar
SF95_13	23878.98	1865.57	9394	Average Salary 1-5 Yrs Exp
SF95_14	27989.7	1619.81	9992	Average Teacher Salary 6-10 yrs
SF95_15	31504.01	1883.58	12321	Average Teacher Salary 11-20 Yr
SF95_16	35941.51	3512.1	17867	Average Teacher Salary 20+ year
SF95_24	6.99	2.14	17.1	Average Years Tenure
SF95_25	10.75	1.94	13.8	Average Teacher Experience
SF95_3	47.48	19.29	116.7	Teachers
SF95_35	59.62	23.55	137.7	Total Staff
SF95_37	46618.67	5315.81	48098	Ave Campus Administrator Salary
SF95_38	34941.19	4191.4	29434	Ave Professional Support Salary
SF95_39	79.28	5.79	34.1	% Teachers
SF95_4	5.71	4.05	26.5	Educational Aides
SF95_5	53.91	21.72	127.4	Professional Staff
SF95_40	6.64	2.49	24.1	% Professional Support Staff
SF95_41	4.17	1.3	14.4	% Campus Administrators
SF95_42	9.92	5.81	30.4	% Educational Aides
SF95_43	90.08	5.81	30.4	% Professional Staff
SF95_44	21.7	22.28	95.6	% Minority Staff (of Total staff)

(table continues)

Variable	Mean	Std. Dev.	Range	Label
SF95_45	9.2	5.49	35.7	% Teachers w/ zero yrs experience
SF95_46	28.59	8.78	55.9	% Teachers 1-5 yrs experience
SF95_47	17.35	6.45	41.5	% Teachers 6-10 yrs experience
SF95_48	28.69	8.36	53.3	% Teachers 11-20 yrs experience
SF95_49	16.18	7.32	52.1	% Teachers with 20+ yrs experience
F95_50	78.71	9.8	59.5	% Regular Teachers
SF95_51	2.21	3.32	29	% Vocational Teachers
SF95_52	1.74	3.06	22.9	% Compensatory Teacher
SF95_53	3.35	4.8	39.7	% Compensatory Ed Teachers
SF95_54	2.58	3.6	32.5	% Gifted and Talented Teachers
SF95_55	9.17	4.14	28.2	% Special Ed Teachers
SF95_57	81.21	21.41	96.2	% White Teachers
SF95_58	8.13	13.72	92.3	% Black teachers
SF95_59	10.13	18.19	94.3	% Hispanic Teachers
SF95_60	28.94	9.07	55.6	% Male Teachers
SF95_61	71.06	9.07	55.6	% Female Teachers
SF95_62	0.18	0.71	8.8	% Native American teachers
SF95_63	0.35	1.03	13.3	% Pacific Island Teacher
SF95_64	15.58	2.11	19.2	Student/Teacher Ratio
ST95_25	0.22	3.74	100	Special Ed Retention Average Gr 5
ST95_26	2.14	5.6	66.7	Special Ed Retention Average Gr 6
ST95_27	3.71	6.86	47.6	Special Ed Retention Average gr 7
ST95_28	3.16	6.86	53.3	Special Ed Retention Average Gr 8
ST95_34	0.14	1.11	16.4	Regular Ed Average Retention Gr 5
ST95_35	2.38	4.31	34.3	Regular Ed Retention Average Gr 6
ST95_36	3.79	5.34	31.8	Regular Ed Retention Average Gr 7
ST95_37	3.02	4.73	36.1	Regular Ed Retention Average Gr 8
ST95_44	748.77	330.45	1916	Total Enrollment
ST95_66	51.71	28.62	97.7	% White
ST95_67	14.29	17.68	94.2	% Black
ST95_68	31.85	28.56	99.5	% Hispanic
ST95_69	0.22	0.31	3.6	% Native Americans
ST95_70	1.93	3.32	28.6	% Pacific Islander Students
ST95_71	43.44	21.98	96.4	% Economically Disadvantaged
ST95_72	7.23	10.7	61.8	% LEP Students
ST95_73	12.49	3.67	21.5	% Special Education students
ST95_74	11.7	13.44	70.8	% Vocational education
ST95_75	5.78	8.98	56.3	% Bilingual students
ST95_76	10.03	7.58	93.3	% Gifted and talented students
ST95_84	3.39	11.36	66.4	% Students-Grade 5

(table continues)

Variable	Mean	Std. Dev.	Range	Label
ST95_85	25.42	19.44	100	% Students Grade 6
ST95_86	35.36	13.76	100	% Students Grade 7
ST95_87	34.05	13.21	100	% Students in Grade 8
ST95_88	1.67	7.48	52	% Students in Grade 9
ST95_92	18.71	6.7	67.6	% Mobile students
TA95_75	56.71	16.06	88.1	Campus TAAS % 95

APPENDIX F

PRINCIPAL COMPONENT ANALYSIS

1993-1994 DATA

1993-1994 Data Factor Loadings

Factor	Variable Symbol	Variable Name	Factor Loading
F1	SF93_13	Teacher Average Salary 1 to 5 yrs exp	.88197
	SF93_15	Teacher Average Salary 11 to 20 yrs exp	.86944
	SF93_6	Teacher Average Salary (Base)	.83674
	SF93_16	Teacher Average Salary >=20 yrs exp	.79720
	SF93_14	Teacher Average Salary 6 to 10 yrs exp	.79145
	SF93_12	Teacher Average Salary Zero yrs exp	.74047
	ST93_36	Students-% Other Ethnicity	.39920
	SF93_39	Staff-% Professional Support	.37615
F2	OT93_6	Campus % Attendance 1992-1993	.94195
	OT93_11	Male % Attendance 1992-1993	.91741
	OT93_10	Female % Attendance 1992-1993	.91109
	OT93_12	Economically Disadv % Att 1992-1993	.86443
	OT93_13	Special Education % Attendance 1992-1993	.85643
	OT93_9	White % Attendance 1992-1993	.83369
	ST93_58	Students- Campus % Mobile	-.54254
F3	SF93_43	Staff-% Minority	.82132
	ST93_33	Students-% White	-.81014
	SF93_56	Teachers-% White	-.79946
	SF93_58	Teachers-% Hispanic	.77001
	ST93_35	Students-% Hispanic	.74665
	ST93_37	Students-% Economically Disadvantaged	.71378
F4	SF93_41	Staff- % Educational Aides	-.94790
	SF93_42	Staff- % Professional Staff	.94790
	SF93_38	Staff- % Teachers	.90728
	SF93_4	Educational Aides	.84114
F5	FI93_22	Expenditures-% Campus Administration	-.74392
	SF93_40	Staff-% Campus Administrators	-.69522
	SF93_3	Teacher	.68065
	SF93_34	Total Staff	.67867
	SF93_5	Professional Staff	.65973
	ST93_12	Total Enrollment	.60517
	FI93_19	Total Operating Expenditures	.58387
F6	ST93_171	Retention-Average Grade 7	.82273
	ST93_172	Retention-Average Grade 8	.78773
	ST93_162	Retention -Average (Special Ed) Grade 7	.74945
	ST93_163	Retention-Average (Special Ed) Grade 8	.65991
	ST93_161	Retention-Average (Special Ed) Grade 6	.57162
F7	FI93_10	Expenditures-% Bilingual Education	.76843
	ST93_41	Students-% Bilingual Program	.74457
	SF93_51	Teachers-% Bilingual/ESL Programs	.73713
	ST93_38	Students-% LEP	.68632

(table continues)

Factor	Variable Symbol	Variable Name	Factor Loading
8	ST93_51	Students-% Grade 6	.87258
	ST93_53	Students-% Grade 8	-.73613
	ST93_52	Students-% Grade 7	-.69908
	ST93_170	Retention-Average Grade 6	.62431
F9	SF93_60	Teachers-% Male	-.81695
	SF93_61	Teachers-% Female	.81695
F10	FI93_14	Expenditures-% Special Education	.81967
	SF93_54	Teachers-% Special Education	.81407
	ST93_39	Students-% Special Education	.68009
F11	SF93_50	Teachers-% Vocational Education	.72157
	ST93_40	Students-% Vocational Education	.70334
	FI93_13	Expenditures-% Vocational Education	.67999
	ST93_54	Students-% Grade 9	.44899
F12	ST93_34	Students-% African American	.84661
	SF93_57	Teachers-% African American	.80984
F13	ST93_169	Retention-Average Grade 5	.82398
	ST93_160	Retention-Average (Special Ed) Grade 5	.71888
	ST93_50	Students-% Grade 5	.71773
F14	FI93_23	Expenditures-% Other	.96715
	FI93_20	Expenditures-% Instruction	.94843
F15	SF93_45	Experience Teachers- % 1 to 5 years	.81288
	SF93_47	Experience Teachers- % 11 to 20 years	-.62411
	SF93_48	Experience Teachers- % more than 20 years	-.60060
	SF93_44	Experience Teachers- % zero years	.54261
F16	ST93_42	Students-% Gifted and Talented	.73509
	SF93_53	Teachers-% Gifted and Talented	.72925
	FI93_12	Expenditures-% Gifted and Talented	.62988
F17	SF93_52	Teachers-% Compensatory Education	.79813
	SF93_49	Teachers-% Regular Education	-.72678
F18	SF93_62	Student/Teacher Ratio	.62155
	ST93_55	Teachers-% Other (Honors/Migrant)	.39961
F19	FI93_21	Expenditures-% Instructional Administration	-.46599
	FI93_11	Expenditures-% Compensatory Education	-.44477
	FI93_9	Expenditures-% Regular Education	.43565
F20	SF93_46	Experience Teachers-% 6 to 10 years	-.89056

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1994-1995 Data Factor Loadings

Factor	Variable Symbol	Variable Name	Factor Loading
F1	SF95_13	Teacher-Average Salary 1 to 5 years exp	.86970
	SF95_6	Teacher-Average Salary (base)	.84140
	SF95_15	Teacher-Average Salary 11 to 20 years exp	.83654
	SF95_16	Teacher-Average Salary=>20 years exp	.81517
	SF95_12	Teacher-Average Salary zero years exp	.78291
	SF95_14	Teacher-Average Salary 6 to 10 years exp	.73322
	SF95_37	Average Campus Administrator Salary	.66283
	SF95_38	Average Campus Prof Support Salary	.62688
	ST95_70	Students-% Pacific Islander	.49675
	SF95_40	Staff-% Professional Support	.38168
	SF95_64	Student/Teacher Ratio	.38074
F2	OT95_69	Campus % Attendance 1994-1995	.93465
	OT95_76	Male % Attendance 1994-1995	.90864
	OT95_75	Female % Attendance 1994-1995	.90046
	OT95_77	Econ Disadvantaged % Att 1994-1995	.86093
	OT95_78	Special Ed % Attendance 1994-1995	.85132
	OT95_72	White % Attendance 1994-1995	.82737
	ST95_92	Campus % Mobile Students	-.51902
F3	ST95_66	Students-% White	-.80560
	ST95_44	Teachers-% Minority	.81929
	ST95_57	Teachers-% White	-.80048
	ST95_59	Teachers-% Hispanic	.76026
	ST95_68	Students-% Hispanic	.75020
	ST95_71	Students-% Econ Disadvantaged	.72217
F4	SF95_3	Teacher FTE	.78198
	SF95_35	Total Staff FTE	.77863
	SF95_5	Professional Staff FTE	.76428
	SF95_41	% Campus Administrators	-.65130
	FI95_22	Expenditures-% Campus Administration	-.65934
	ST95_44	Campus Total Enrollment	.72115
	FI95_19	Total Operating Expenses	.69333
F5	ST95_36	Retention-Average Grade 7	.81410
	ST95_37	Retention-Average Grade 8	.77698
	ST95_27	Retention-Average (Sp Ed) Grade 7	.72819
	ST95_28	Retention-Average (Sp Ed) Grade 8	.68159
	ST95_26	Retention-Average (Sp Ed) Grade 6	.59845
F6	SF95_42	Staff-% Educational Aides	-.92909
	SF95_43	Staff-% Professional Staff	.92909
	SF95_39	Staff-% Teachers	.88525
	SF95_4	Educational Aides	-.82476
F7	SF95_25	Teachers-Average years experience	.93793
	SF95_49	Teachers-%> 20 years experience	.84980
	SF95_24	Teachers-Average years tenure	.83511
	SF95_46	Teachers-%1 to 5 years experience	-.65642

(table continues)

Factor	Variable Symbol	Variable Name	Factor Loading
F8	ST95_85	Students-% Grade 6	.87579
	ST95_87	Students-% Grade 8	.78158
	ST95_86	Students-% Grade 7	-.71474
	ST95_35	Retention-Average Grade 6	.58039
F9	FI95_10	Expenditures-% Bilingual	.76738
	SF95_52	Teachers-% Bilingual/ESL	.75969
	ST95_75	Students-% Bilingual Education	.72037
	ST95_72	Students-% LEP	.67695
F10	SF95_55	Teachers-% Special Education	.81697
	FI95_14	Expenditures-% Special Education	.81790
	ST95_73	Students-% Special Education	.66341
F11	SF95_51	Teachers-% Vocational	.72086
	ST95_74	Students-% Vocational Education	.70358
	FI95_13	Expenditures-% Vocational Education	.63520
	ST95_88	Students-% Grade 9	.60609
F12	ST95_84	Students-% Grade 5	.72478
	ST95_34	Retention-Average Grade 5	.80104
	ST95_25	Retention-Average (Sp Ed) Grade 5	.72640
F13	SF95_61	Teachers-% Female	.78832
	SF95_60	Teachers-% Male	-.78832
F14	ST95_67	Students-% Black	.88888
	SF95_58	Teachers-% Black	.80821
F15	FI95_23	Expenditures-% Other	-.96919
	FI95_20	Expenditures-% Instruction	.93707
F16	FI95_12	Expenditures-% Gifted & Talented	.65446
	ST95_76	Students-% Gifted & Talented	.72228
	SF95_54	Teachers-% Gifted & Talented	.66795
F17	FI95_12	Expenditures-% Instructional Administration	.43038
	FI95_11	Expenditures-% Compensatory Education	.61725
	FI95_9	Expenditures-% Regular Education	-.65145
F18	SF95_53	Teachers-% Compensatory Education	.84627
	SF95_50	Teachers- % Regular Education	-.66515
F19	SF95_48	Teachers-% 11 to 20 years exp	-.77943
F20	SF95_47	Teachers-% 6 to 10 years exp	.90936

APPENDIX H

TEXAS MIDDLE SCHOOL TAAS RESULTS

1993-1995

Middle School TAAS Results
% Passing All Sections

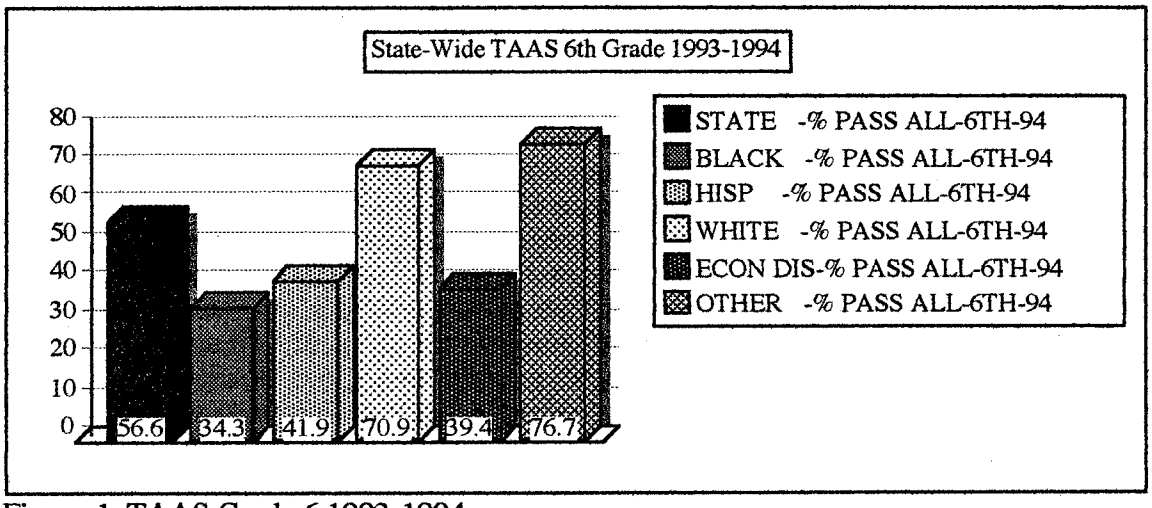

Figure 1. TAAS Grade 6 1993-1994

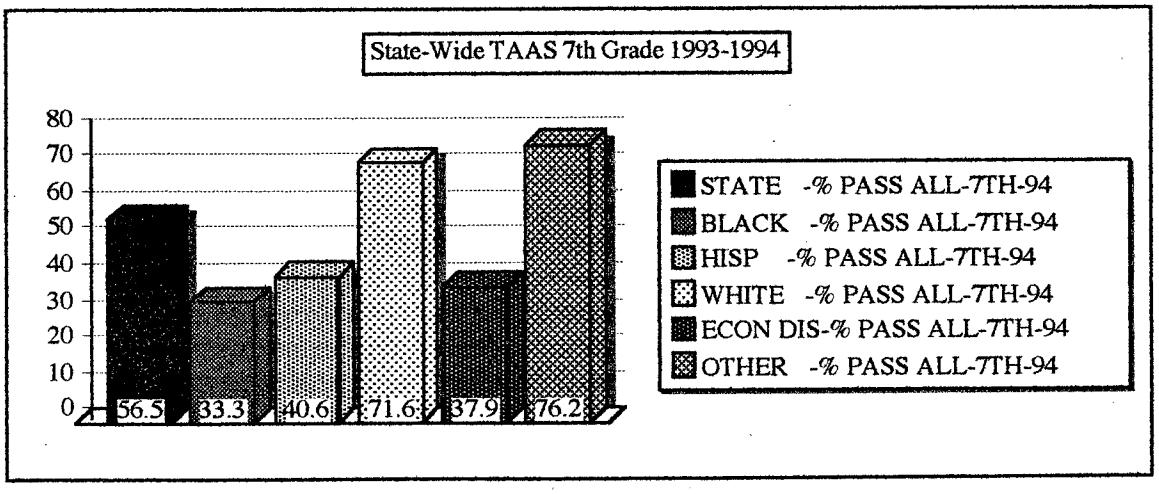

Figure 2. TAAS Grade 7 1993-1994

Middle School TAAS Results
% Passing All Sections

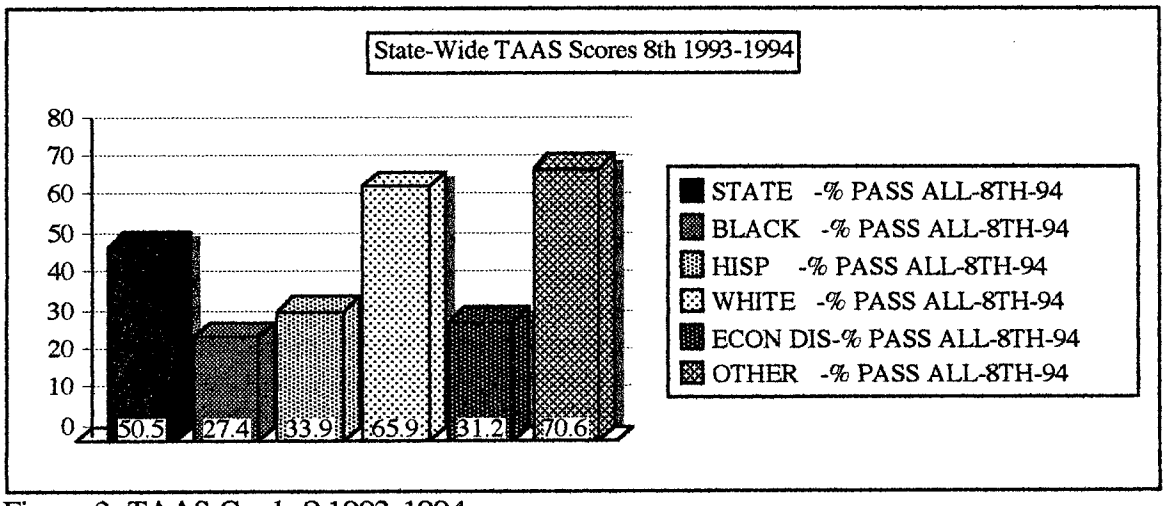

Figure 3. TAAS Grade 8 1993-1994.

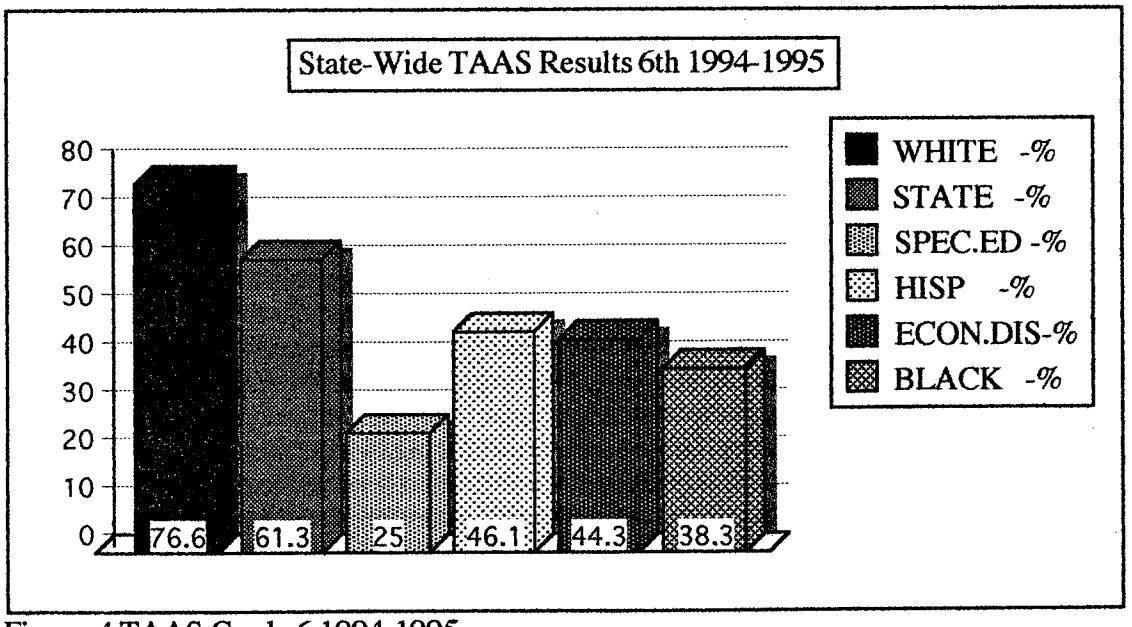

Figure 4.TAAS Grade 6 1994-1995

Middle School TAAS Results
% Passing All Sections

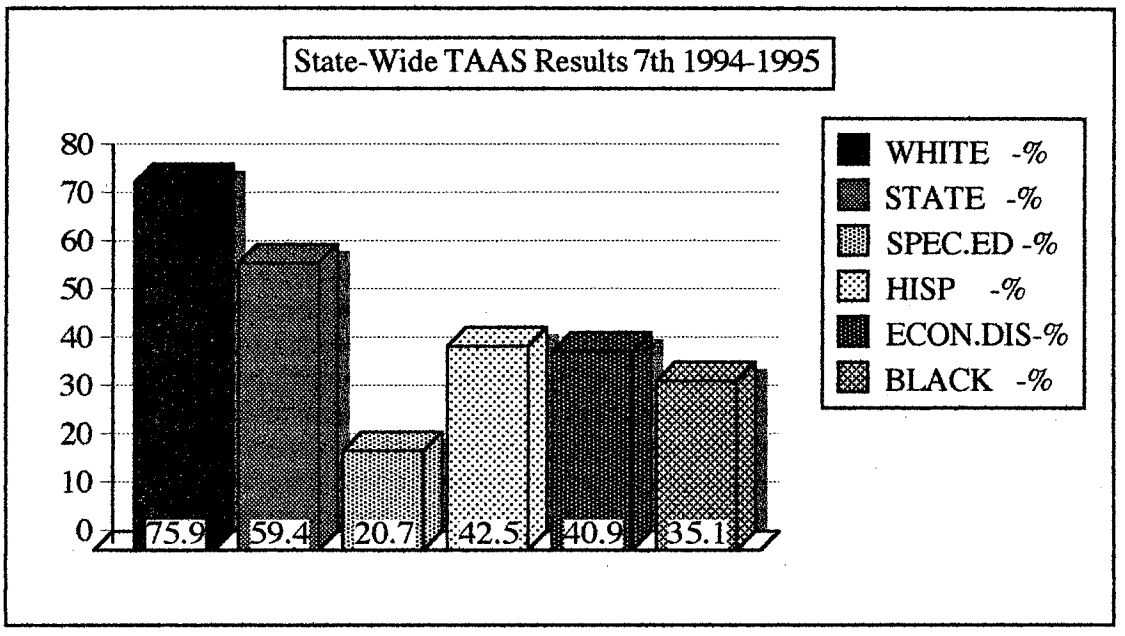

Figure 5.TAAS Grade 7 1994-1995

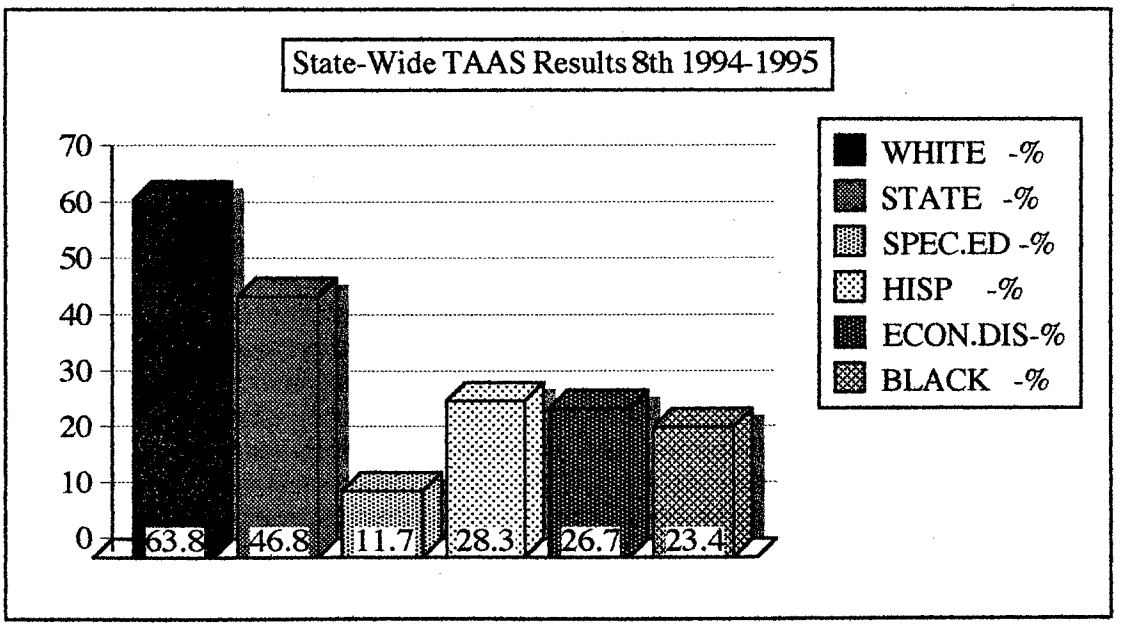

Figure 6. TAAS Grade 8 1994-1995.

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