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An Analysis of the Relationship between Student Achievement and Various School Factors in Selected Iowa School Districts

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AN ANALYSIS OF THE RELATIONSHIP BETWEEN STUDENT ACHIEVEMENT AND VARIOUS SCHOOL FACTORS IN SELECTED IOWA SCHOOL DISTRICTS

by

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VITA

The author, Thomas Alan Emrick, is the son of Dean Emrick and Alice (Sauter) Emrick. He was born July 28, 1950, in Saint Paul, Minnesota.

His elementary education was obtained in the public schools of Kirkwood, Missouri. His secondary education was completed in 1968 at Bettendorf High School, Bettendorf, Iowa.

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CHAPTER I

INTRODUCTION

During the course of recent history, public education has been through many societal trends. The most recent of these is a time of mounting awareness for public education concerning the role it was to play in society. Serious concerns pertaining to the level of performance have come to the fore. Many articles and studies were published questioning the ability of public education to perform its task of producing a literate populace. The most comprehensive and condemning of these studies was published in 1984. According to the National Commission on Excellence in Education "our Nation is at risk because of the rising tide of mediocrity which exists in our schools."[1] This condemnation of our public education system was followed by other studies equally critical of the state of education. In conjunction with the criticism, numerous recommendations were made for the improvement of the public education system. The recommendations included, but were not limited to, lengthening of

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[1] Report of National Commission on Excellence in Education, A Nation at Risk: The Imperative for Education Reform, Superintendent of Documents, U. S. Government Printing Office, Washington D. C., 1984

the school day and year, and improving salaries so that are professionally competitive, market sensitive, and performance based.[2] In an effort to placate the critics, many states began to overhaul the entire public education system with massive changes in curriculum, programming and funding. These reform packages were, in many cases very directly related to the recommendations in the Nation at Risk report. Some of the measures implemented included teacher competency testing, student competency testing, increased graduation requirements, and performance based salary packages for teachers.

Because of the nature of the reform initiatives, many school districts became caught by the factors of declining enrollments, declining funding, and greater accountability to the public. In Iowa, the Department of Education addressed the problem with a document called the revised Educational Standards. Many of the provisions in the revised state standards focused on the same issues addressed in the recommendation portion of the Nation at Risk. The major issues in the state standards address academic programming for elementary and secondary students. Other provisions of the standards relate to school calendar and contract days,

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[2] Ibid.

school operation, staffing, certification and training of teachers and administrators. The most severely affected school districts in Iowa are rural. Iowa has 436 school districts at this writing. Over half of these districts have an elementary average daily membership fewer than 500. As graduation requirements increase and the student population decreases many districts are unable to support the required programs. In some cases the technology of cable television has allowed for limited use of interactive cable to provide inter-district classes at the secondary level. This however, did not address the majority of districts nor the magnitude of the problem. This led to talk about district reorganization and consolidation.

Statement of The Problem

The purpose of this study was to analyze the relationship between student achievement and a variety of school and geographic factors in selected rural Iowa school districts.

Procedure

Iowa currently has 436 K-12 school districts. These were compared against a preset selection criteria. The school districts included in this study

needed to operate with a single elementary attendance center with a grade range of K-6. A review of Iowa Department of Educations' Basic Educational Data Survey indicated that schools meeting those criteria ranged in enrollment from 47 students to 519 students. They were fairly well distributed geographically throughout the state. The purpose for the single elementary attendance center for each district rests with the fact that the study used the 1986 adjusted gross income figure (line 26 of the Iowa 1040 form or line 4 of the Iowa 1040A) for individuals residing within each of the identified school districts as a measure of socioeconomic status. Limiting the sample to one elementary building districts, the study was able to minimize a number of uncontrollable variables, including but not limited to, individual building wealth.

The achievement scores were the grade equivalents of the complete composite portion of the Iowa Test of Basic Skills for sixth grade pupils. The researcher felt that sixth grade should consistently be the exit grade for the schools involved with this study. The Iowa Department of Education was able to provide a complete listing of school districts and their organization. There were 175 school districts in Iowa that met those characteristics. The researcher then

contacted all 175 districts and asked them to submit a voluntary report of the current 1987-1988 sixth grade class "complete composite" N (number of students taking the test), IGE (Iowa grade equivalent), AVG/IPR (average Iowa percentile for pupils, not schools). Also required was the norm period the test was administered i.e. fall, midyear, or spring. Each letter of request was personalized to the receiving district. The letter included a stamped self-addressed envelope and a sample of the Iowa Test report from which the requested data could be found, as well as a form on which the data could be recorded and returned. One hundred twenty-four usable responses were returned.

Further data were then collected for those one hundred twenty-four schools. Those data came from three main sources: The Iowa Department of Education, the Iowa Department of Revenue, and the Iowa Department of Management. The data per school district included 1. pupil teacher ratio, 2. certified staff experience, 3. average transportation time for elementary students, 4. student achievement, 5. size of contributing town/city, 6. per pupil allocation, 7. pupil mobility, 8. average daily attendance, 9. school size, 10. socioeconomic status, 11. state contribution, 12. administrative intensity, 13. Area Education Agency number, 14. geographic quadrant. Each dependent

variable was then placed in a rationally derived factor group. Those groups were as follows:

School Factors - Pupil Teacher Ratio, Certified Staff Experience, School Size

Student Factors - Average Daily Attendance, Pupil Mobility, Achievement

Fiscal Factors - Per Pupil Expenditures, State Contribution, Socioeconomic Status

Geographic Factors - Town Size, Geographical Location, Average Transportation Time, Area Education Agency

Research Questions

The study concerned itself with the following four research questions.

Research Question 1: Does Administrative Intensity have an effect on selected dependent measures?

Research Question 2: Does the geographical quadrant have an effect on selected dependent measures?

Research Question 3: Does the Area Education Agency have an effect on selected dependent

measures?

Research Question 4: Do any of the dependent variables predict academic achievement as measured by the complete composite score on the Iowa Test of Basic Skills?

Definition of Terms

The following terms were used in the study.

Administrative Intensity

The responsibility of the line administrator for the elementary attendance center. Either full time or shared responsibility.

Certified Staff Experience

The total amount of certified teaching experience the staff of the attendance center had expressed as an average of years over teachers.

Pupil Teacher Ratio

The ratio of certified staff to students within the attendance center.

Community Economy Base

Property tax levies for local schools by class of property. Including residential, agricultural land, commercial, or industrial.

Size of Contributing Town/City

The population of the city/town where the attendance center is located.

Geographical Location

The quadrant of the state in which the school district is located.

Area Education Agency

The Area Education Agency number that serves the school district. (AEA)

Average Transportation Time

The average amount of time the typical elementary student rides a school bus one way to or from the attendance center.

Average Daily Attendance

The average daily attendance factor for the individual building. This is expressed as a percentage of average daily membership (enrollment) divided by the average daily attendance (students present).

Pupil Mobility

Expressed as a percentage of enrollment divided by average daily membership.

School Size

The total enrollment of regular elementary classrooms grades kindergarten through sixth.

Per Pupil Allocation

This reflects the per pupil amount, based on average daily membership of each schools district's revenue account, to the total operating fund revenue.

State Contribution

The amount, expressed in percent of total state sources (lines 600-699 page 3 of Secretaries Annual Report) to the total revenue fund.

Socioeconomic Status (SES)

This is reported for the district as an average of total income of line 26 of the Iowa 1040 form or line 4 of the Iowa 1040A (adjusted gross income) from within the school district's boundaries divided by the number of returns filed within the school district's boundaries.

Student Achievement (ACH)

The Iowa Grade equivalent from the Iowa Test of Basic Skills expressed as an average for the pupils, not the school. The scores are expressed consistently as fall norms for the purpose of this study.

Limitations of the Study

The ability to generalize the results of this study may be limited by the following factors. The school districts involved in this study were all public schools, rural in nature, in the state of Iowa. The schools, by the design of this study were in school districts where there was only one elementary attendance center. All of the schools had a grade range of kindergarten through sixth grade. There were 175 schools qualifying for this study, however, only 124 returned usable data.

The search of the related literature was done in libraries on the campuses of Loyola University of Chicago, the University of Iowa, and computer communication with Dialog2 information systems using ERIC and Dissertation Abstract files.

Organization of the Study

The purpose of this study was to analyze the relationship between student achievement and a variety of school and geographic factors in selected rural Iowa school districts. This study is presented in a five chapter format. Chapter I has presented an introduction, a statement of the problem, a purpose, a

procedure, a definition of terms, and the limitations of the study. In Chapter II the review of the related literature will be presented. The review will look at literature as it relates to the variables that are used in this study. Chapter II will also look at literature that questions some long held research based assumptions that educators hold. Chapter III will present the methodology as it relates to the study. A review of the sampling, population, data collection and statistical analysis used in the study. Chapter IV contains a presentation and analysis of the data. Chapter V will provide a summary, conclusions, and recommendations from the study.

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

Introduction

The product of public education is measured as student achievement. Commonly this assessment is based on standardized student achievement test scores. Because of the significance of student achievement to the public as the yardstick of school performance student achievement and the studies of factors affecting student achievement have been one of the most widely researched topics in the field of education. The purpose of this chapter is to give an overview of related literature and research pertaining to the topic of this study. The organization of this chapter will follow the dependent and independent variables selected for the study. The study used eleven dependent measures and three independent measures. The dependent measures were as follows:

1. pupil teacher ratio, 2. certified staff experience, 3. average transportation time for elementary students, 4. student achievement, 5. size of contributing town/city, 6. per pupil expenditure, 7. pupil mobility, 8. average daily attendance, 9. school size, 10.

socioeconomic status, 11. state contribution. The three dependent measures included administrative intensity, geographical quadrant of the state, and Area Education Agency. In each case the definition of the term as defined for the purpose of this study will precede each discussion. A review of the literature and research base found no study of similar nature previously done.

Literature Review of Variables

Many of the studies reviewed used some of the measures selected by this study. Some of the measures were selected for the study based on previous literature. In some instances the literature was very clear about the measures effect but in many cases there was contradicting evidence as to the role the variable played in student achievement. Other measures not found in literature or research were also used in the study. Some of these, such as Area Education Agency were State of Iowa specific.

Socioeconomic Status (SES)

Socioeconomic status has been a significant topic of research for the educational community. Due, in large part, to the lack of a consistent definition of what socioeconomic status included, the conclusions

drawn from that research have been conflicting. For the purposes of this study the following definition of socioeconomic status will be used. An average of total income of line 26 of the Iowa 1040 form or line 4 of the Iowa 1040A (adjusted gross income) from within the school district's boundaries divided by the number of returns filed within the school district's boundaries. In 1966, Coleman's Equality of Educational Opportunity Report summarized the school's effect on students this way:

> Differences in school facilities and curriculum, which are the major variables by which attempts are made to improve schools, are so little related to differences in achievement levels of students, that with few exceptions, their effects fail to appear even in a survey of this magnitude.[1]

The effect of Coleman's research was that many schools accepted the belief that they had little, if any, effect on student achievement because of the overpowering effect of a student's socioeconomic status history. As this sentiment continued to grow, it had the effect of popularizing theories such as the cultural deprivation theory. The educational community used such theories to exonerate their own culpability

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[1]Coleman, J.S.; Campbell, E.A.; Hobson, C.J.;Macpartland, J.; Mood, A.M.; Weinfeld, F.D.; York, R.L. Equality of Educational Opportunity. Washington, D.C.: U.S. Government Printing Office, 1966, p. 316

for poor student achievement. The Elementary and Secondary Education Act , subsequent amendments and legislation were a direct response by the federal government to minimize the effect poverty would have on the educational process. One of the controversial conclusions of Coleman's report was restated by Smith (1972) as follows:

> "...the amount of school resources correlated slightly with poor achievement scores. Achievement was related more with school attendance with classmates of superior educational backgrounds and aspiration."[2]

Other research conducted during the same period provided additional support for blaming the factors of socioeconomic status for poor student achievement. Wilson (1968) determined that socioeconomic status accounted for the third greatest variance in sixth grade reading achievement scores behind only race and neighborhood.[3] Fox and Gallimore (1976) studied the effects of socioeconomic status at very early ages in education by looking at preschool and kindergarten students. Their analyses led to the conclusion that "SES is clearly more important to kindergarten

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[2]Smith, S. Marshall. Equality of Educational Opportunity: The Basic Findings Reconsidered. In F. Mostseller, and D.D. Moynihan. On Equality of Educational Opportunity. New York: Vintage Books, 1972.

[3]Wilson, Alan B., "Social Class and Equal Educational Opportunity. Harvard Educational Review, 1968, 38, 77-84.

achievement than preschool attendance."[4] Findings related to low socioeconomic status and low achievement were starting to be questioned by research throughout the early to mid nineteen-seventies. However, in 1979 the first major research project that disputed the relationship of socioeconomic status and achievement was presented to the American Educational Research Association by Karl White. White performed a meta-analysis involving over 100 studies that yielded 636 correlation coefficients. The findings indicated that the relationship between socioeconomic status and achievement is much weaker than people have assumed and that the variance in reported correlations between socioeconomic status and achievement was due to the fact that most of the significant variables which influence the strength of the correlation were directly under the researcher's control.[5] Also in 1979, and contrary to White's research was a study done by Creamer and Lorentz. SES was again one of the

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[4]Fox, Candace; Gallimore, Ronald, The Relationship of Preschool Experience and Socioeconomic Status to Kindergarten and First Grade Achievement, Technical Report #65, (Kamehameha Schools, Honolulu, Hawaii. Kamehameha Early Education Project.), 1976, EDRS, ED158864, microfiche

[5]White, Karl R., "The Relationship Between Socioeconomic Status and Academic Achievement." Paper presented at the annual meeting of the American Educational Research Association, 12 April 1979, (San Francisco, CA) EDRS, ED171871, microfiche

variables used in measuring student achievement for fifth and sixth grade students from Georgia. The results of the study indicated that high socioeconomic students scored higher in reading achievement that did students from low socioeconomic backgrounds.[6] Similar findings were presented by Shakiba-Nejad and Yellin in 1981. After examining data on 76 elementary school students, a conclusion was drawn that there was "a strong positive correlation between a student's SES and academic achievement in school."[7] During a period from 1978 to 1981 Edington and Martellaro studied the effect of both ethnicity and socioeconomic status in 566 New Mexico public schools for grades 5, 8 and 11. Their findings concluded that " academic achievement appears highly related to socioeconomic status."[8] As late as 1986 Walberg et al. determined for third, sixth and ninth grade students in a range from 261 to 507

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[6]Creamer, Mary; Lorentz, Jeffery L., "Effects of Teacher Structure, Teacher Affect, Cognitive Levels of Questions, Group Size and Student Social Status on Reading Acheivement," Paper presented at the annual meeting of the National Reading Conference, November 29-December 1, 1979, (San Antonio, TX), EDRS,ED185517, microfiche

[7]Shakiba-Nejad, Hadi; Yellin, David, Socioeconomic Status, Academic Achievement and Teacher Response, 1981, 1, Dialog2, ERIC, ED231754

[8]Edington, Everett D.; Martellaro, Helena C., "Variables Affecting Academic Achievement in New Mexico Schools," Paper presented at the annual meeting of the American Educational Research Association, 23-27 April 1984, (New Orleans,LA), EDRS, ED271267, microfiche

(depending on grade level and tests) New Jersey districts, that:

> "average student test scores were significantly associated with the socioeconomic status of the districts. Higher SES districts, as expected, achieved more than lower SES districts."[9]

It matters little whether the researcher assumes White's (1979) position that socioeconomic status has been exaggerated as an influence on student academic achievement or the body of other research which indicates a high correlation for socioeconomic status and student academic achievement. With the apparent importance of potential impact of socioeconomic status on student academic achievement, SES was chosen as one of the variables for analysis in this study. The selection of family adjusted gross income was influenced by Matuszek and Haskin (1978). In their study of second and fifth grade students in Texas they found that "the most consistent indicators of children with lower achievement were those most "traditionally" used for SES-- parental income, education and job status."[10]

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[9]Walberg, Herbert J.; Fowler, William J.,Jr., Expenditures and Size Efficiencies of Public School Districts, 1986, 1, Dialog2, ERIC, ED274471

[10]Matuszek, Paula; Haskin, Christine, "Who Are The Disadvantaged and What Should We Do For Them? The Relationship of Family Variables to Achievement and Some Implications for Educational Programming," Paper presented at the annual meeting of the American

School Size

The student enrollment of elementary attendance centers has been long debated both from educational and fiscal perspectives. Currently in the state of Iowa, of the 436 public school districts, over half have an elementary enrollment of fewer than 500 students. As school district consolidation discussions continue at both the state legislative and local board levels, it appeared appropriate to include school size as a measure in the study. The school enrollment size for schools involved in the study ranged from 47 to 519 students in average daily membership. The definition of school size for the purpose of this study is the total enrollment of regular elementary classrooms in a kindergarten through sixth grade facility. A look at other related studies involving school size follow. In a 1983 study, Yap, dealing with a Title 1 program concluded that school/project enrollment was a potent variable for predicting Title 1 student achievement.[11] Contrary to the conclusions of Yap (1983) were two other studies. Primarily because the decision to

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[11]Yap, Kim Onn, "Promoting Evaluation Use Through Technical Assistance: An SEA Example," Paper presented at the annual meeting of the American Educational Research Association, 67, 11-15 April,1983, ERIC, ED229433

consolidate schools is often based on enrollment Rohr (1980) looked at 13,000 students in Montgomery County in Maryland in grades kindergarten through sixth. The study focused on the standardized achievement scores of students in grades three and five. Rohr's findings follow:

> "It was found, for all the analyses, that elementary school size did not make a significant contribution to the variance in academic achievement. Also, on the basis of the data available and for the students tested, it was also concluded that there is no elementary school size which maximizes academic achievement, nor is there a minimum or a maximum elementary school size beyond which academic achievement is adversely affected."[12]

In New Mexico in 1983, again because of the movement to small school consolidation, Martellaro and Edington studied the effect of school size and academic achievement. Five hundred and sixty-six public New Mexico schools were involved with the study. The findings indicated:

> " that two variables, percentage of students eligible for Title 1 in the lower grades and the student ethnicity variable in higher grades, were far more useful predictors of

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[12]Rohr, Harry Philip, "An Investigation of the Relationship Between Size of Elementary Schools and Academic Achievement," (Ed.D. diss., Virginia Polytechnic Institute and State University, 1980), 1-3

academic achievement in a school than school size."[13]

Based on similar conditions with regard to small school district consolidation in the state of Iowa, the variable of school size was identified for this study.

Pupil Mobility

Pupil mobility as defined for the purposes of this study was the enrollment divided by the average daily membership. This factor was represented as a percent. Mobility appears in the literature as a consistent finding. A study by Benson et al. (1979) looked at mobility as it related to sixth grade achievement, classroom adjustment and socioeconomic status. One conclusions from that study was:

> "As mobility increases, achievement declines. Results indicate mobility to be inversely related to achievement, adjustment and socioeconomic status."[14]

Providing additional support to the question of mobility affecting student achievement was Miller

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[13]Martellaro, Helena C.; Edington, Everett, "Relationship of School Enrollment Size to Academic Achievement in New Mexico," Paper presented to the annual meeting of the Rural Education Association, 16-18 October, 1983, (Manhattan, KS), EDRS, ED234956, microfiche

[14]Benson, Gerald P.; etal., "Mobility in Sixth Graders as Related to Achievement, Adjustment, and Socioeconomic Status," Psychology in the Schools 16, no. 3 (1979): 444-47

(1986). In a study involving public elementary schools in Kansas City, Kansas, Miller predicted performance levels for the schools based on socioeconomic factors. The study continued with those schools deviating from the projection on 67 variables. Miller's conclusions were:

> "Results indicated that schools achieving higher than expected were smaller, had lower pupil mobility, had teachers with more structured methods, and had principals and students with more positive reading attitudes."[15]

The potential for high mobility factors in rural Iowa school districts resulting from significant enrollment decreases and poor agricultural economies in the state led to the inclusion of mobility as a dependent variable for this study.

Administrative Intensity

When referred to in this study, administrative intensity is defined as the responsibility of the elementary line administrator either as full time or part time. The role of the elementary principal although constantly being researched is also constantly changing. Moody and Amos (1975) found that the role of

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[15]Miller, John W.; et al., "Public Elementary Schools Which Deviate from the Traditional SES-Achievement Relationship," Education Research Quarterly 10, no. 3 (1986): 31-50

the principal when extensively engaged in team planning was significant to the achievement of the students at the school.[16] The question would follow if a part time administrator could become extensively engaged in team planning. The teacher's perception of the principal's role is also well studied. As part of a three year study in the Seattle School District and the University of Washington, Andrews et al. (1986) used disaggregated for ethnicity and SES achievement scores of students in 67 public elementary schools. Their conclusions were:

> "The findings of this study suggest that teachers' perceptions of the principal as instructional leader are critical to the reading and mathematics achievement of students, particularly among historically low-achieving groups of students."[17]

Again, the question of how part time principal would be perceived is important. The current recommendations in the Revised State Educational Standards for Iowa include the requirement that all elementary schools be staffed with a full time

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[16]Moody, Lamar; Amos, Nil G., The Impact of Principal Involvement in Instructional Planning with Teacher Teams on Academic Achievement of Elementary School Pupils. Mississippi State University, State College, Bureau of Educational Research, 1975, EDRS, ED116298

[17]Andrews, Richard L.; et al., "Principal Roles, Other In-School Variables, and Academic Achievement by Ethinicity and SES." Paper presented to the annual meeting of the American Educational Research Association, 16-20 April 1986, (San Francisco, CA), EDRS, ED268664, microfiche

administrator. The revision states:

> 670-4.4(4) Required administrative personnel. Each board that operates both an elementary school and a secondary school shall employ as its executive officer and chief administrator a person who holds a certificate endorsed for service as a superintendent. The board of a school district may meet this requirement by contracting with its area education agency for "superintendency services" as provided by the Iowa Code section 273.7A. The individual employed or contracted for as superintendent cannot also serve as a principal in that school or school district. Boards of school districts may jointly employ a superintendent, provided such arrangements comply with the provisions of Iowa Code subsection 279.23(4).[18]

The revised standards which are part of the Iowa Administrative Code are published with an effective date of July 1, 1989. Currently many of the smaller buildings in Iowa have part time administrators. Many serve in the capacity of Superintendent/Elementary Principal. The financial effect of a full time administrator may hasten the consolidation discussions already taking place. The purpose of the inclusion of this variable in the study was to determine the effect a full time administrator versus a part time administrator has on student achievement in the schools examined.

Average Daily Attendance (ADA)

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[18]Iowa Administrative Code, section 256.17. and 256.670-4.4(4), 1835, 1988

Average daily attendance is defined for the purposes of this study as average daily membership (enrollment) divided by the average daily attendance (students present) and is represented in the study as a percent. A study done by Taylor (1980) looked at the factors absenteeism, and mobility in an urban Michigan school district. The population was represented by a stratified random sample of five hundred-fifteen sixth grade students. Taylor's conclusions were:

> "There were significant differences in performance on the MAT among students with different levels of absenteeism; that is, students of average and above average SES having high levels of absenteeism showed statistically high losses in academic achievement while students of below average SES showed significantly lower achievement levels in the MAT scores, regardless of attendance level. This may indicate that attendance levels by themselves, without other enrichment, did not increase achievement for below average SES students."[19]

Additionally, Shakiba-Nejad and Yellin (1981) in their study of 76 elementary students in Oklahoma "... attributed poor academic achievement in part to the

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[19]Taylor, Robert Lewis, " A Two-Year Study of the Effect of Absenteeism and Mobility on the Sixth Grade Achievement in an Integrated School District," (Ph.D. diss., University of Michigan, 1980), vol. 41/05-A, Dissertation Abstracts International, 35, Dialog2

fact that lower SES students have very poor attendance records." [20]

Per Pupil Allocation

This study defines per pupil allocation as the per pupil amount, based on daily membership, of each school districts' revenue account, to the total operating fund revenue. There is a discrepancy in the research as to the effect per pupil allocations have on student achievement. Yap (1983) suggest that per pupil cost is a "potent variable for predicting Title 1 student achievement."[21] Walberg and Fowler (1986) however colluded:

> "Per-student expenditures on education were insignificantly associated with achievement test scores, so low spending districts on average achieved as efficiently as high spending districts."[22]

They continue to state that "In general, the smaller the district, the higher the achievement when SES and per-student expenditures were taken into

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[20]Shakiba-Nejad, Hadi; Yellin, David, Socioeconomic Status, Academic Achievement and Teacher Response, 1981, 1, Dialog2, ERIC, ED231754

[21]Yap, Kim Onn, "Promoting Evaluation Use Through Technical Assistance: An SEA Example," Paper presented at the annual meeting of the American Educational Research Association, 67th, Montreal, Quebec, 11-15 April 1983, ERIC, ED229433

[22]Walberg, Herbert T.; Fowler, William J. Jr., Expenditures and Size Efficiencies of Public School Districts, 1986, 1, Dialog2, ERIC, ED274471

account."[23] In an attempt to determine the effect per student allocation has on the population of this study, it has been included as a dependent measure.

The following measures have also been included in the study as issues of question. Many of the folowing variables are at the center of many consolidation discussions and all remain as very important considerations for schools throughout the state. The impact on student achievement for the types of Iowa schools involved in this study remain undefined. The variable definition for the purpose of the study have been included. Some of the definitions indicate that they are Iowa specific by nature.

Pupil Teacher Ratio

Pupil Teacher ratio has been defined as the ratio of certified staff to students within the attendance center.

Student Achievement

The fall norms of the Iowa grade equivalent from the Iowa Test of Basic Skills expressed as an average for the pupils, not the school, was the standard of student achievement for this study.

Certified Staff Experience

The total amount of certified staff teaching experience divided by the number of staff.

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[23]Ibid.

State Contribution

The amount, expressed in percent of the total state sources (lines 600-699 page 3 of the Secretaries Annual Report) to the total revenue fund.

Transportation Time

The average amount of time the typical elementary student rides a school bus one way, to or from, the attendance center.

Town Size

Population of the city/town where the attendance center is located.

Area Education Agency

The area education agency is a geo-political educational service unit in the state of Iowa. There are 15 areas at the time of this writing.

Even though these factors are debated and contested there is no clear answer to the effect these variables have on student achievement. By inclusion in the study, additional and current data will be available for the decision making process.

Chapter III presents the methodology for the study.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this chapter is to present the procedures and methodology used in this study. The chapter will include the population and sample of the study; the design of the study; the data gathering procedures; and the statistical treatment of the data.

Population of the Study

The population of this study included public school districts in the state of Iowa that had one elementary attendance center with a grade range of kindergarten through sixth grade. This led to typically rural school districts with building enrollments from 47 students to 519 students. One hundred-seventy five school districts in the state of Iowa met those criteria. The resulting sample was determined by including all of the one hundred-seventy five districts that returned usable data for student academic achievement on the researchers questionnaire. One hundred twenty-four school districts returned usable academic achievement data.

Design of the Study

This study was guided by four research questions. The purpose of the questions were to determine what, if any, effect selected dependent variables might have on student achievement. Additionally, what effect does administrative intensity, geographic quadrant, or Area Education Agency have on the eleven selected dependent variables. The research questions for the study follow.

Research Question 1: Does Administrative Intensity have an effect on selected dependent measures?

Research Question 2: Does the geographical quadrant have an effect on selected dependent measures?

Research Question 3: Does the Area Education Agency have an effect on selected dependent measures?

Research Question 4: Do any of the dependent variables predict academic achievement as

measured by the complete composite score on the Iowa Test of Basic Skills?

Data Gathering Procedures

The first step in data collection was to identify the schools in the state that met the criteria of being kindergarten through sixth in grade range and the single elementary attendance center for the school district. This information was obtained from an Iowa Department of Education report of school districts enrollments generated from the Basic Educational Data Survey submitted by school districts each September. A letter of identification and a request for specific student achievement scores was then sent to all one hundred-seventy five school districts asking them to submit a voluntary report of the current 1987-1988 sixth grade class "complete composite" N (number of students taking the test), IGE (Iowa grade equivalent), AVG/IPR (average Iowa percentile for pupils, not schools). Also required was the norm period the test was administered i.e. fall, midyear, or spring. Each letter of request was personalized to the receiving district. The letter included a stamped self-addressed envelope and a sample of the Iowa Test report that the

data requested could be found on, as well as a form on which the data could be recorded and returned. As reported, one hundred-twenty four returned usable scores.

Further data were then collected for those one hundred-twenty four schools. Those data came from three sources: The Iowa Department of Education, the Iowa Department of Revenue, and the Iowa Department of Management. The data for each school district included 1. pupil teacher ratio, 2. certified staff experience, 3. average transportation time for elementary students, 4. student achievement, 5. size of contributing town/city, 6. per pupil expenditure, 7. pupil mobility, 8. average daily attendance, 9. school size, 10. socioeconomic status, 11. state contribution, 12. administrative intensity, 13. Area Education Agency number, 14 geographical quadrant.

Data Treatment and Analysis

Each of the eleven dependent variables was placed in the following rationally derived factor groups:

SCHOOL FACTORS Pupil Teacher Ratio, Certified Staff Experience, School Size

STUDENT FACTORS Average Daily Attendance, Pupil Mobility, Achievement

FISCAL FACTORS Per Pupil Expenditures, State Contribution, Socioeconomic Status

GEOGRAPHIC FACTORS Town Size, Transportation Time

Statistical breakdowns were done on all of the variables. The purpose of the breakdowns was to provide the reader with an overview of the data. In each breakdown table there was printed a grand mean and standard deviation. The breakdown function then provided the same information for each of the dependent variables by each of the independent variables. Breakdowns of all the variables were done using SPSS^{x}. All variables were then submitted to an analysis of variance with the main effect being administrative intensity, geographic quadrant, and Area Education Agency. TUKEY tests were performed on those dependent variables returning levels of significance at the .05 level. A TUKEY test will indicate the contrasting variables and with which division of the independent variable it was contrasting. A multiple regression analysis was also performed to answer research question four.

CHAPTER IV

PRESENTATION AND DISCUSSION OF DATA

Introduction

The purpose of this chapter is to present the relevant findings resulting from statistical analysis of the data collected for this research. The data presented in this chapter were collected from three sources, the identified school district, the Iowa Department of Education, and the Iowa Department of Management.

This chapter presents the data in the following order. A statistical breakdown of the variables is presented first. The purpose of the statistical breakdown was to provide the reader with an overview of the variability of the data. There are three breakdowns, including the mean and standard deviation for each of the variables. A more complete look at the variance of the data is available in Appendix A, where a histogram with attending statistics for each variable was printed. The histogram provides a visual depiction of the data variability including the ability to see, where appropriate, statistical "outliers" where they existed . The first breakdown used Administrative Intensity as the independent variable. The second

breakdown used Geographic Quadrant. The third breakdown was with Area Education Agency as the independent variable. Consistent with each breakdown, the variables are grouped into the four subgroups, School Factors, Student Factors, Fiscal Factors, and Geographic Factors. A discussion follows each of the breakdown tables presented in this chapter.

Following the statistical breakdown analysis, this chapter presents the findings resulting from the Analysis of Variance done using Administrative Intensity, Geographic Quadrant, and Area Education Agency as main effects. All of the statistical applications presented in this study were done using the Statistical Package for the Social Sciences, release 2.2.

The research questions that directed this presentation and discussion of data were:

Research Question 1: Does Administrative Intensity have an effect on selected dependent measures?

Research Question 2: Does Geographical Quadrant have an effect on selected dependent measures?

Research Question 3: Does the Area Education Agency have an effect on selected dependent measures?

Research Question 4: Do any of the dependent variables predict academic achievement as measured by the complete composite score on the Iowa Test of Basic Skills?

Statistical Breakdown of the Variables

A review of the data presented on Table 4.1 is most easily done by variable. The first column provides the mean and standard deviation for the entire population of one hundred twenty-four. This is referred to throughout the chapter as the grand mean. The following columns present the data for the breakdown factor indicated by the title of the table and attending column headings. This practice is repeated on subsequent tables.

TABLE 4.1

STATISTICAL BREAKDOWN BY
ADMINISTRATIVE INTENSITY

	ENTIRE POPULATION (N=124)		SPLIT ADMINISTRATION (N=65)		FULLTIME ADMINISTRATION (N=59)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS						
Pupil Teacher Ratio	16.2855	3.3332	15.9277	3.3625	16.6797	3.2838
Certified Staff Experience	13.1177	3.6730	12.7354	3.5176	13.5390	3.7200
School Size	219.7903	93.8836	173.0615	62.0284	271.2712	96.4542
STUDENT FACTORS						
Average Daily Attendance	96.3121	.7410	96.3323	.7916	96.2898	.6870
Pupil Mobility	.9630	.0256	.9628	.0298	.9632	.0227
Achievement	6.8715	.6814	6.8452	.6680	6.9005	.7004
FISCAL FACTORS						
Per Pupil Expenditures	3856.1774	808.4380	3935.1538	819.2213	3769.1695	794.2179
State Contribution	37.9000	13.0643	34.7314	13.8193	41.1705	11.4220
Socio Economic Status	13026.8226	1797.4821	12428.1231	1260.8281	13686.4068	2062.3855
GEOGRAPHIC FACTORS						
Town Size	1357.1210	1184.6302	1180.2000	1209.2161	1552.0339	1135.2820
Transportation Time	58.5274	12.6026	58.2323	12.0803	58.8525	13.2509

As indicated by the standard deviation on Table 4.1, there was very little variability in the data for pupil teacher ratio within the administrative structures compared by this study. The same was true for Certified Staff Experience. The standard deviations for School Size however indicated a greater variability of data. It appears that schools with split duty principals tend to be smaller than those with fulltime principals.

The data for student factors present a very similar tendency for schools represented in this study regardless of their administrative intensity. In all three factors of Average Daily Attendance, Pupil Mobility, and Achievement there was little variability in the data.

Fiscal factors included for the purpose of this study were, Per Pupil Expenditures, State Contribution, and Socioeconomic status. The means of per pupil expenditures were very consistent between the entire population and the two types of administrative assignments. The standard deviations would indicate little variability in the data. State Contribution is expressed as a percentage of the total fund revenue. In this area the appears to be some distinction between fulltime and split administrators. Split administration received a mean contribution of 34.73 percent while fulltime administrators schools received 41.17 percent

from the state. The variable of socioeconomic status also presents some diversity within the studies population. The mean adjusted gross income for the entire population was $13,026.82. The mean adjusted gross income for schools having split administrators was $12,428.12, some $598 less than the grand mean. The adjusted gross income for the fulltime administrative school group was $13,686.41, $660 more than the grand mean and $1260 more than the split administrators school group. The standard deviation would seem to indicate a greater variability of adjusted gross within the data provided for the fulltime administrative group.

Geographic factors included town size and transportation time. The grand mean for the town size was 1,357 people. The mean for the split administration was 1,180 people while the mean for fulltime was 1,552, approximately 375 people less. The variability of the data in this case seemed to be reasonably consistent between groups. The analysis of the reported data for transportation time was very consistent between the entire population and the two administrative groups.

A similar discussion of data for the same variables as broken down by geographic quadrant follows. Quadrants One and Two appear on Table 4.2

while the data for Quadrants Three and Four appear on Table 4.3. The grand mean appears on both tables for ease of comparison. The factor groups are consistent with the previous reporting.

TABLE 4.2

STATISTICAL BREAKDOWN BY
STATE QUADRANTS ONE AND TWO

	ENTIRE POPULATION (N=124)		NORTHWEST QUADRANT 1 (N=59)		NORTHEAST QUADRANT 2 (N=24)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS						
Pupil Teacher Ratio	16.2855	3.3332	15.7186	3.5755	17.0024	2.5227
Certified Staff Experience	13.1177	3.6730	13.0661	3.8218	14.6000	3.7667
School Size	219.7903	93.8836	194.8475	98.0308	252.5000	69.3924
STUDENT FACTORS						
Average Daily Attendance	96.3121	.7410	96.3712	.9133	96.4042	.5425
Pupil Mobility	.9630	.0256	.9659	.0268	.9692	.0241
Achievement	6.8715	.6814	6.8781	.6503	6.9037	.7884
FISCAL FACTORS						
Per Pupil Expenditures	3856.1774	808.4380	4073.2542	1068.4836	3720.2917	338.9228
State Contribution	37.9000	13.0643	30.6098	11.5846	45.3996	13.8940
Socio Economic Status	13026.8226	1797.4821	12928.8305	1359.0661	13641.0833	1515.5211
GEOGRAPHIC FACTORS						
Town Size	1357.1210	1184.6302	1423.1017	1396.3881	1417.0000	983.0549
Transportation Time	58.5274	12.6026	57.8017	9.9901	55.4292	12.8914

TABLE 4.3

STATISTICAL BREAKDOWN BY
STATE QUADRANTS THREE AND FOUR

	ENTIRE POPULATION (N=124)		SOUTHEAST QUADRANT 3 (N=15)		SOUTHWEST QUADRANT 4 (N=26)	
	X	S.D.	X	S.D.	X	S.D.
SCHOOL FACTORS						
Pupil Teacher Ratio	16.2855	3.3332	17.2600	2.9272	16.3462	3.5386
Certified Staff Experience	13.1177	3.6730	12.8533	3.2118	12.0192	2.9074
School Size	219.7903	93.8836	257.7333	110.3886	224.3077	80.2236
STUDENT FACTORS						
Average Daily Attendance	96.3121	.7410	96.2467	.5370	96.1308	.5297
Pupil Mobility	.9630	.0256	.9480	.0257	.9592	.0262
Achievement	6.8715	.6814	6.6320	.6413	6.9650	.6755
FISCAL FACTORS						
Per Pupil Expenditures	3856.1774	808.4380	3578.4667	436.1433	3649.2308	367.3926
State Contribution	37.9000	13.0643	47.3227	7.3489	42.0842	8.3443
Socio Economic Status	13026.8226	1797.4821	13581.6667	2953.7597	12362.0769	1892.8829
GEOGRAPHIC FACTORS						
Town Size	1357.1210	1184.6302	1104.2000	783.0161	1298.0385	1045.2519
Transportation Time	58.5274	12.6026	60.9867	13.6824	61.6154	16.3752

Per pupil Ratio appeared to have little variability in the data and the range of variance for the means for the quadrants is small. Certified staff experience also showed little variability in the data, noting that the southwest quadrant averaged approximately 1 year less experience than the grand mean while northeast averaged approximately 1.5 years more than the grand mean.

The grand mean for school size was 220 students. The school size in the northwest averaged 26 students less than the grand mean the northeast and southeast averaged 32 and 37 students more respectively than the grand mean.

Student achievement ranged from the low in the southeast at 6.63 to the high of 6.97 in the southwest. The grand mean for this variable was 6.87. The norm score for this test using Iowa norms for fall testing was 6.1.

The grand mean for per pupil expenditures was $3,856. The northwest quadrant showed the largest mean expenditure with $4,073 while the southeast expended on average $3,578 for the low. There appeared to be greater variability of the data for the northwest quadrant.

The northwest quadrant considering an N of 59 showed a significantly lower percentage of state contribution than either the grand mean or the other three quadrants. The grand mean was 37% while the northwest reported only 30%. The was 17% less than reported by the 15 cases in the southeast quadrant. The variability within the southeast was also low with a standard deviation almost half of the grand means' standard deviation.

The statistical breakdown by Area Education Agencies (AEA) required five Tables numbered Table 4.4 through Table 4.8. The data for the entire population appears in the first column on all five tables. Area Education Agencies 1,2 and 3 appear on Table 4.4. Area Education Agencies 4,5 and 6 appear on Table 4.5. Area Education Agencies 7, 9 and 10 appear on Table 4.6. (Note there is no Area Education Agency 8 in Iowa) Agencies 11,12 and 13 appear on Table 4.7 while Table 4.8 displays data on agencies 14,15 and 16.

TABLE 4.4

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 1, 2 AND 3

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 1 (N=3)		AREA EDUCATION AGENCY 2 (N=9)		AREA EDUCATION AGENCY 3 (N=9)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	19.5667	1.9553	14.9444	3.2319	15.7222	3.9079
Certified Staff Experience	13.1177	3.6730	15.2333	1.0405	13.3889	3.5512	12.5333	3.1548
School Size	219.7903	93.8836	305.6667	71.5984	154.0000	44.8665	129.7778	40.8068
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.7333	.6658	96.4556	.4640	96.7556	.6616
Pupil Mobility	.9630	.0256	.9767	.0058	.9667	.0250	.9711	.0196
Achievement	6.8715	.6814	6.5433	.4188	7.2578	.6493	7.2022	.6876
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3777.3333	401.0204	3953.6667	588.5357	4225.5556	608.0703
State Contribution	37.9000	13.0643	46.3333	9.4271	18.5444	8.2938	22.5844	8.7894
Socio Economic Status	13026.8226	1797.4821	11798.3333	254.5375	12853.8889	826.4452	12201.6667	655.3278
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	2807.0000	2039.5002	1441.2222	1453.9738	1726.7778	1983.2682
Transportation Time	58.5274	12.6026	67.6667	15.0231	54.1000	7.3634	59.4556	8.9045

TABLE 4.5

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 4, 5 AND 6

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 4 (N=9)		AREA EDUCATION AGENCY 5 (N=18)		AREA EDUCATION AGENCY 6 (N=7)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.5556	2.2040	15.0333	4.3065	18.1286	3.5551
Certified Staff Experience	13.1177	3.6730	14.6333	2.9799	14.1500	3.9673	12.5571	3.9660
School Size	219.7903	93.8836	298.8889	140.1931	188.8333	83.6732	222.4286	74.3390
SIUDENT FACIORS								
Average Daily Attendance	96.3121	.7410	96.8778	.6099	96.2167	.8972	96.4714	.4572
Pupil Mobility	.9630	.0256	.9722	.0139	.9672	.0216	.9729	.0111
Achievement	6.8715	.6814	7.1144	.7065	6.5628	.5623	6.9371	.4849
FISCAL FACIORS								
Per Pupil Expenditures	3856.1774	808.4380	3584.4444	297.9770	4281.6111	1260.3379	3344.8571	183.9759
State Contribution	37.9000	13.0643	35.9356	7.5964	29.6850	7.7906	34.3786	10.3595
Socio Economic Status	13026.8226	1797.4821	13112.7778	981.3450	12936.7778	766.1816	13605.8571	1299.0282
GEOGRAPHIC FACIORS								
Town Size	1357.1210	1184.6302	2158.2222	1692.4807	997.6667	864.0131	1097.5714	541.5191
Transportation Time	58.5274	12.6026	53.4000	7.7558	62.8833	10.4598	60.7571	17.7695

TABLE 4.6

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 7, 9* AND 10

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 7 (N=12)		AREA EDUCATION AGENCY 9 (N=5)		AREA EDUCATION AGENCY 10 (N=8)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.4833	2.2607	15.8200	3.5492	17.1000	2.1514
Certified Staff Experience	13.1177	3.6730	14.7833	3.7675	14.8600	4.0636	12.0625	3.7420
School Size	219.7903	93.8836	275.6667	65.7769	205.6000	72.8581	271.3750	144.8703
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.2750	.5345	95.8800	.9094	95.6875	1.5643
Pupil Mobility	.9630	.0256	.9667	.0277	.9560	.0321	.9550	.0307
Achievement	6.8715	.6814	6.9242	.9358	6.7720	.7790	6.4887	.7245
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3766.8333	300.4566	4148.8000	338.1127	3534.7500	245.1948
State Contribution	37.9000	13.0643	49.5492	8.7720	48.9680	7.6901	49.1825	9.6143
Socio Economic Status	13026.8226	1797.4821	14107.2500	1425.2823	12589.6000	842.9011	14780.0000	3443.6511
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	1505.8333	618.2938	680.0000	438.3874	1226.8750	954.9010
Transportation Time	58.5274	12.6026	53.1667	12.4249	61.3200	12.1863	53.1500	11.8677

* There is no Area Education Agency 8 in Iowa

TABLE 4.7

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 11, 12 AND 13

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 11 (N=11)		AREA EDUCATION AGENCY 12 (N=6)		AREA EDUCATION AGENCY 13 (N=13)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.6909	3.6344	15.5333	1.7259	15.9231	3.3539
Certified Staff Experience	13.1177	3.6730	9.8545	3.2219	13.5333	4.9549	12.2615	3.3210
School Size	219.7903	93.8836	223.5455	82.7108	199.0000	71.7273	215.0000	57.6223
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.3182	.4729	96.2500	.4680	96.0231	.5918
Pupil Mobility	.9630	.0256	.9618	.0483	.9567	.0234	.9515	.0273
Achievement	6.8715	.6814	6.7455	.5161	6.9367	.4838	7.0685	.6952
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	4270.9091	1686.5062	3640.1667	225.0204	3660.2308	295.2686
State Contribution	37.9000	13.0643	41.2955	17.0291	42.6750	7.0846	38.5715	6.7376
Socio Economic Status	13026.8226	1797.4821	13907.3636	2504.2517	12237.0000	1569.5282	13270.3077	1456.3432
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	1237.3636	1115.6612	1083.6667	1346.4565	1236.9231	1112.7054
Transportation Time	58.5274	12.6026	52.4364	8.1271	57.6000	11.2965	60.0385	8.2873

TABLE 4.8

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 14, 15 AND 16

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 14 (N=10)		AREA EDUCATION AGENCY 15 (N=2)		AREA EDUCATION AGENCY 16 (N=2)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.3700	3.8494	20.2000	2.4042	18.3000	2.5456
Certified Staff Experience	13.1177	3.6730	12.5800	2.0890	12.8500	5.1619	12.3000	1.8385
School Size	219.7903	93.8836	218.5000	105.0188	199.5000	14.8492	299.0000	45.2548
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.3400	.3836	96.5500	.2121	96.2500	.0707
Pupil Mobility	.9630	.0256	.9610	.0233	.9300	.0141	.9450	.0071
Achievement	6.8715	.6814	6.8490	.7484	6.9550	.7425	6.3050	.5586
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3672.5000	470.3744	3264.0000	45.2548	3298.5000	218.4960
State Contribution	37.9000	13.0643	43.8960	5.3430	48.5750	4.1790	55.6550	5.4235
Socio Economic Status	13026.8226	1797.4821	10760.6000	990.6220	10306.5000	17.6667	15351.0000	121.6224
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	1397.2000	1080.1872	899.0000	193.7473	1518.5000	741.7550
Transportation Time	58.5274	12.6026	66.1600	24.1937	71.1000	10.3238	59.0500	.0707

The grand mean for the population on the variable of Pupil Teacher Ratio was 16.28 with a standard deviation of 3.33. The lowest reporting AEA was number 2 with 14.9 while the highest was AEA 1 with 19.5 and a standard deviation of 1.96.

Certified Staff Experience displayed a grand mean of 13.11 years of experience with AEA 1 again having the largest value at 15.2 years. AEA 11 had the lowest value with 9.8 years.

There appeared to be a significant difference in school size across the 15 areas. The grand mean was 220 students. AEA 1 had the largest schools with 305 members while AEA 3 had the smallest schools participating in this study with 129 members. The greatest variability seemed to be reflected by a standard deviation of 140 in AEA 4.

There was very little difference across the state with regards to Average Daily Attendance. The grand mean was 96.3 with the range of means low to high of 95.5(AEA 15) to 96.8(AEA4).

Pupil mobility was also very close to the grand mean of 96% with the exception of AEA 15 with a mean of 93% and a standard deviation approximately half that of the grand mean. AEA's 1, 15 and 16 do have a small N and that could account for both of those statistics

however, notable.

Achievement scores reported approximately a nine month range with a grand mean of 6.87. This statistic was reported in Iowa norms for fall testing dates.

The grand mean for per pupil expenditures was $3,856. AEA 15 reported the lowest per pupil expenditure of $3,264 while AEA 5 reported the highest with $4,281. This is also noteworthy because, AEA 5 reported only 29.68% in state contribution as opposed to the grand mean of 37.9%. AEA 5 also has an N of 18.

State contribution had a wide range across the fifteen Area Education Agencies. The grand mean was 37.9% with the low report of 18.54% coming from AEA 2. AEA 16 reported the highest share of state contribution with 55.65%.

Socioeconomic status also had a range of about $5,000 by Area Education Agency. The grand mean was $13,026. Area Education Agency 15 had a mean of $10,306. Area Education Agency 16 had a mean of $15,351.

The grand mean for town size was 1,357 people. Area Education Agency 1 had the largest mean with 2,807 residents while Area Education Agency 9 had a mean of 680 residents.

The range for student transportation was almost nineteen minutes. The grand mean for this variable was 58.5 minutes. AEA 15 had a mean of 71 while AEA 11 had a mean of 52.4 minutes.

Preparation of Tables

An analysis of variance was computed for all dependent variables by Administrative Intensity, Geographic Quadrant, and by Area Education Agency. Tables presented in this chapter were restricted to those dependent variables that returned levels of significance at the .05 level. Complete ANOVA tables were included in Appendix B. These dependent variables were also submitted to a TUKEY test. The purpose of the TUKEY test was to clarify where the interaction of contrast between the independent variable and the dependent variable, at the .05 level or less, took place.

Presentation of Data by Research Question

Research Question 1: Does Administrative Intensity have an effect on selected dependent measures?

Table 4.9 represents the data collected and treated related to the measure of administrative intensity.

TABLE 4.9

SIGNIFICANT
ANALYSIS OF VARIANCE
FOR ADMINISTRATINE INTENSITY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
School Size					
MAIN EFFECTS	298299.134	1	298299.134	46.310	0.000*
ADMINISTRATIVE INTENSITY	298299.134	1	298299.134	46.310	0.000*
EXPLAINED	298299.134	11	298299.134	46.310	0.000*
RESIDUAL	785839.415	122	6441.307		
TOTAL	1084138.548	123	8814.135		
State Contribution					
MAIN EFFECTS	6272.500	1	2090.833	17.044	0.000*
ADMINISTRATIVE INTENSITY	6272.500	1	2090.833	17.044	0.000*
EXPLAINED	6272.500	11	2090.833	17.044	0.000*
RESIDUAL	14720.531	122	122.671		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	48966698.844	1	48966698.844	17.145	0.000*
ADMINISTRATIVE INTENSITY	48966698.844	1	48966698.844	17.145	0.000*
EXPLAINED	48966698.844	11	48966698.844	17.145	0.000*
RESIDUAL	348439173.253	122	2856058.797		
TOTAL	397405872.097	123	3230942.050		

* Significant at .05

The analysis of variance for administrative intensity produced three dependent variables that returned levels of significance at the .05 level or less. Those three variables were school size, socioeconomic status and state contribution. The data appeared to indicate that there is a correlation between the administrative intensity of a school, and the size of the school population, the socioeconomic status of its constituents, and the percentage of the total revenue fund that is provided by the state. No TUKEY was performed in this instance. It is intuitive that difference is between the two groups of full time and split-time administrators. In response to research question 1, administrative intensity seems to have an effect on three of our dependent variables.

Research Question 2: Does Geographic Quadrant have an effect on selected dependent measures?

Table 4.10 represents the data collected and treated related to the measure of state quadrant.

TABLE 4.10

SIGNIFICANT
ANALYSIS OF VARIANCE
FOR QUADRANT

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
School Size					
MAIN EFFECTS	84510.449	3	28170.150	3.382	.021*
QUADRANT	84510.449	3	28170.150	3.382	.021*
EXPLAINED	84510.449	3	28170.150	3.382	.021*
RESIDUAL	999628.099	120	8330.234		
TOTAL	1084138.548	123	8814.135		
Per Pupil Expenditures					
MAIN EFFECTS	5493725.603	3	1831241.868	2.934	.036*
QUADRANT	5493725.603	3	1831241.868	2.934	.036*
EXPLAINED	5493725.603	3	1831241.868	2.934	.036*
RESIDUAL	74895620.493	120	624130.171		
TOTAL	80389346.097	123	653571.919		
State Contribution					
MAIN EFFECTS	6272.500	3	2090.833	17.044	0.000*
QUADRANT	6272.500	3	2090.833	17.044	0.000*
EXPLAINED	6272.500	3	2090.833	17.044	0.000*
RESIDUAL	14720.531	120	122.671		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	25728970.779	3	8576323.593	2.769	.045*
QUADRANT	25728970.779	3	8576323.593	2.769	.045*
EXPLAINED	25728970.779	3	8576323.593	2.769	.045*
RESIDUAL	371676901.318	120	3097307.511		
TOTAL	397405872.097	123	3230942.050		

* Significant at .05

The analysis of variance for geographic quadrants produced four dependent variables that returned levels of significance within the stated acceptance level of .05. Three of the four significant variables were the same as with administrative intensity: school size, socioeconomic status, and state contribution. The additional significant dependent variable was per pupil expenditure. In an effort to identify in which quadrants the contrast appeared a TUKEY was performed. The contrast appeared between the northwest quadrant with a school size mean of 194.8475 and the northeast quadrant with a school size mean of 252.5000.

The TUKEY procedure did not report any two groups significantly different at the .05 level for per pupil expenditure. The same result occurred for the TUKEY analysis for socioeconomic status. The TUKEY however did report three groups at a .05 level of significance on the dependent variable of state contribution. The contrast groups were quadrants two, three and four with quadrant one. The means for the groups were 30.6098 for group one (northwest), 42.0842 for group four(southwest), 45.3996 for group two(northeast), and 47.3227 for group three(southeast). In response to research question two, it appeared that geographic quadrant does have an effect on these four dependent variables state contribution,

socioeconomic status, school size, and per pupil expenditure.

Research Question 3: Does the Area Education Agency have an effect on selected dependent measures?

Table 4.11 represents the data collected and treated related to the factor of area education agency.

TABLE 4.11

SIGNIFICANT
ANALYSIS OF VARIANCE
FOR AREA EDUCATION AGENCY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
School Size					
MAIN EFFECTS	283803.754	14	20271.697	2.761	.002*
AREA EDUCATION AGENCY	283803.754	14	20271.697	2.761	.002*
EXPLAINED	283803.754	14	20271.697	2.761	.002*
RESIDUAL	800334.794	109	7342.521		
TOTAL	1084138.548	123	8814.135		
State Contribution					
MAIN EFFECTS	11779.180	14	841.370	9.953	0.000*
AREA EDUCATION AGENCY	11779.180	14	841.370	9.953	0.000*
EXPLAINED	11779.180	14	841.370	9.953	0.000*
RESIDUAL	9213.851	109	84.531		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	143040867.353	14	10217204.811	4.378	0.000*
AREA EDUCATION AGENCY	143040867.353	14	10217204.811	4.378	0.000*
EXPLAINED	143040867.353	14	10217204.811	4.378	0.000*
RESIDUAL	254365004.744	109	2333623.897		
TOTAL	397405872.097	123	3230942.050		

* Significant at .05

Three dependent variables returned values within the accepted level of significance. Those variables had appeared in both the significant administrative intensity and the geographic quadrant tables.
The results for the dependent variable of school size indicated the following relationships. Area Education Agency 3 (mean 129.7778) returned a significant correlation with both Area Education Agency 7 (mean 275.6667) and Area Education Agency 4 (mean 298.8889). Area Education Agency 2 (mean 154.0000) also returned a significant correlation with Area Education Agency 4 (298.8889).

Area Education Agency 14 returned a level of significance with seven other AEA's on the dependent measure of socioeconomic status. Area Education Agency 14 (mean 10,760.60) contrasted with AEA 5 (12,936.7778), AEA 13 (13,270.3077), AEA 6 (13,605.8571), AEA 11 (13,907.3636), AEA 7 (14,107.25), AEA 10 (14,780.00), and AEA 16 (15,351.00). Area Education Agency 15 (10.306.50) also paired with Area Education Agency 10 (14,780.00). The last pairing was AEA 3 (12,201.6667) and AEA 10 (14,780.00).

In an effort to clarify the reporting of the pairs of groups for the dependent variable state contribution, table 4.12 has been prepared to represent the results of the TUKEY.

Table 4.12

TUKEY FOR INTERACTION OF AREA EDUCATION AGENCIES AND STATE CONTRIBUTION

Mean	AEA	AEA 2	AEA 3	AEA 5	AEA 6
35.94	4	*			
38.57	13	*	*		
41.29	11	*	*		
42.68	12	*	*		
43.89	14	*	*	*	
46.33	1	*	*		
48.58	15	*	*		
48.97	9	*	*	*	
49.18	10	*	*	*	
49.55	7	*	*	*	*
55.66	16	*	*	*	

In response to research question number three, it appears that the Area Education Agency does have an effect on three dependent variables. Those variables are school size, socioeconomic status, and state contribution.

Research Question 4: Do any of the dependent variables predict academic achievement as measured by the complete composite score on the Iowa Basic Skills Test?

Table 4.13 represents the data collected and treated, with a multiple regression analysis, related to the predictive value of the dependent variables on academic achievement.

TABLE 4.13

MULTIPLE REGRESSION ANALYSIS

DEPENDENT VARIABLE ACH (STUDENT ACHIEVEMENT)

MULTIPLE R	.33844
R SQUARE	.11454
ADJUSTED R SQUARE	.03618
STANDARD ERROR	.66892

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
STATE CONTRIBUTION	-.015678	.005785	-.300601	-2.7100	.0078
CERT. STAFF EXPERIENCE	.002733	.017222	.014533	.1590	.8742
TOWN SIZE	-5.77293E-05	5.8708E-05	-.100370	-.9830	.3275
PUPIL MOBILITY	-1.355996	2.331870	-.052806	-.5820	.5621
TRANSPORTATION TIME	-.005200	.005355	-.096187	-.9710	.3336
AVERAGE DAILY ATTEND.	.052900	.086961	.057528	.6080	.5442
PUPIL TEACHER RATIO	.033352	.021617	.163159	1.5430	.1256
SOCIO-ECONOMIC STATUS	-8.29153E-05	4.0119E-05	-.218738	-2.0670	.0410
PER PUPIL EXPENDITURE	-5.04178E-05	9.2865E-05	-.005982	-.0540	.9568
SCHOOL SIZE	.001720	9.6978E-05	.236940	1.7330	.0789
(CONSTANT)	4.201912	8.589921		.4890	.6257

The purpose of a multiple regression analysis is to factor each dependent variable, in this case according to predictive strength into an equation that yielded an R Square. This statistic indicates the relative combined strength of the variables in predicting another variable. The combination of ten dependent variables produced an R Square of .11454. This has been interpreted to mean that the combined effect of the ten variables in predicting student achievement was approximately eleven and one half percent. These variables provided a very weak predictive value for academic achievement.

Findings and Implications for Policy Makers

The following discussion is based on the premise that the purpose of public schools in Iowa is to provide for student academic achievement, at appropriate levels, while maintaining the fiscal integrity of our school systems.

Personnel costs assume the largest portion of all school districts operating revenue. Issues that have the potential to enlarge that cost factor need to be studied carefully. The current revised state standard, to be effective July 1, 1989, section 256.670-4.4(4) and 256.670-4.4(5) require " each board operating an elementary school to employ at least one elementary

principal." The code further states that the individual employed as the elementary principal may not also be employed as the superintendent. Of the 65 split duty administrators in this study, 85% serve in that dual role. The code allows for service in other capacities, such as combined with teaching or as a secondary principal. This, however, is not how most of the split duty assignments are combined. The financial effect of requiring those positions to be separated would be appropriate if the purpose was to improve delayed student achievement scores in those buildings. The results of this study clearly indicate that not only are the achievement scores for those building not delayed (6.84), they are not significantly behind those buildings of similar design with full time administrators (6.90). In either case, the scores are a full seven months ahead of Iowa norms for that testing period would dictate (6.1). The State of Iowa should celebrate the fact that small schools are indeed demonstrating student achievement at an excellent rate. The appropriateness of requiring districts to stop the practice of combining the position of superintendent and elementary principal should be subjected to further review by both the State Legislature of Iowa and the Department of Education. Another interesting distinction between the two school types was the

percentage of state contribution. Schools with split duty administration reported 34.7% of their revenue budget from state contribution. Schools with full time administrators averaged 41.2% of their revenue budget contributed by the state. This is particularly significant when the split duty administrative districts also demonstrated lower socioeconomic status, $12,428 as compared to the $13,686 figure for full time administration. The lower socioeconomic school district in Iowa simply did not conform to the widely accepted achievement/SES theory that would project lower achievement for those of lower socioeconomic status. The concern needs to be addressed that since the state is not providing funds at the same rate for the split duty schools as it is for the full time administrative schools, and these schools tend to be lower in socioeconomic status, how are they generating $166 more in per student expenditures than the full time administrative schools. Even though the achievement is very close, the question that needs to be asked is if the burden of support equally similar? Local school boards should be reluctant to alter their administrative staffing patterns until an appropriate school based purpose has been demonstrated and documented.

The data for geographic quadrants in the state of Iowa revealed the following information. Schools in the southeastern quadrant tended to be larger with a mean enrollment of 257.7 students as compared to a grand mean of 219 students. Schools in the northwest averaged somewhat smaller in size with a student enrollment of 194.8. Achievement scores by quadrant were very consistent. The grand mean for the state was 6.87. The largest variation from that mean by any of the four quadrants was .24. This is extremely significant for both state level officials as well as local officials. It can be said that the geographic location of the kindergarten through sixth, single attendance center makes no difference in the quality of education. In the lowest quadrant the achievement factor was a full five plus months ahead of the Iowa norm. In terms of per pupil expenditures, the range was within $300 of the state grand mean of $3,856 for all of the quadrants. Interestingly the northwest quadrant spent about $200 more than the grand mean but received 7% less in state contribution. Schools in the southeastern quadrant spent about $300 less than the grand mean while receiving a 10% higher share of their budget from state sources than the grand mean. Socioeconomic status is spread evenly throughout the state as represented by these school district. In each

of the four cases the quadrant was within 5% of the grand mean.

In an effort to further regionalize the state, Area Education Agencies were used in this study. The school size grand mean was 220 students. Schools in AEA 1 tended to be the largest (305) while AEA 3 calculated to be the smallest (129). A significant range was indicated for state contribution within the agencies. Area Education Agency 2 schools reported only 18.54% of their revenue fund from a state contribution while schools in Area Education Agency 16 received a state contribution mean of 55.65%. The AEA 16 mean for socioeconomic status was the highest at $15,351 as compared to $13,306 for a grand mean. There is certainly a wide variation as to the level of state contribution within the state. It would appear that legislature should look at these levels in the funding formula process. It would appear to underline the burden of support question raised earlier. The most encouraging statistic out of the Area Education Agency review was in the area of achievement. Each of the fifteen Area Education Agencies calculated means +/- four months from the grand mean of 6.87. This further reinforces the previous contention that geographic location has little impact on a students opportunity for good elementary education in the state

of Iowa's small school districts the way they are currently configured. This should be a very significant factor for the State Department of Education and the State Legislature when discussions of appropriate school models arise. There clearly is nothing academically deficient in the current operation of these schools. Local boards of these types of schools should be commended for the direction they have provided their systems' in maintaining excellence. The local boards should also show caution when discussions of altering current configurations occur.

An important finding from this study was what was not found. Based on the evidence presented in this study the factors of certified staff experience, socioeconomic status, per pupil expenditure, pupil teacher ratio, school size, average daily attendance, pupil mobility, state contribution, town size, and transportation time, have slightly more than a ten percent predictive value for student academic achievement. The state and involved districts should pride themselves in the fact that average daily attendance and pupil mobility across the state in these districts was 96.3%. Equally important was that there was very little variability in the data. There is an important caveat in interpreting this study. These factors do not predict with any strength student

achievement as the data was collected and treated. There is no attempt made here to predict what the largest class size could be, or what the longest bus ride without academic success declining might be. Clearly the study indicates that what currently is happening in these schools is effective education. Before changes are made to the system the legislature and Department of Education need to examine what and why changes should occur. It should be statistically apparent that larger is not better. It clearly is not the single k-6 attendance center district that is pulling down the academic norm in the state, for the state norm to be 6.1 at fall testing, someone must be scoring lower than the 6.87 mean of these schools.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to present a summary of the findings of this study and to suggest recommendations for further research on this topic. The presentation of the summary is directed by the research questions of this study.

Research Question 1: Does Administrative Intensity have an effect on selected dependent measures?

Research Question 2: Does Geographical Quadrant have an effect on selected dependent measures?

Research Question 3: Does the Area Education Agency have an effect on selected dependent measures?

Research Question 4: Do any of the dependent variables predict academic achievement as

measured by the complete composite score on the Iowa Test of Basic Skills?

The study used eleven dependent measures and three independent measures. The dependent measures were as follows:

1. pupil teacher ratio, 2. certified staff experience, 3. average transportation time for elementary students, 4. student achievement, 5. size of contributing town/city, 6. per pupil expenditure, 7. pupil mobility, 8. average daily attendance, 9. school size, 10. socioeconomic status, 11. state contribution. Each of the dependent variables was then placed in a rationally derived factor group. Those groups are as follows:

School Factors - Pupil Teacher Ratio, Certified Staff Experience, School Size

Student Factors - Average Daily Attendance, Pupil Mobility, Achievement

Fiscal Factors - Per Pupil Expenditures, State Contribution, Socioeconomic Status

Geographic Factors - Town Size, Average Transportation Time

The independent measures were Administrative Intensity, Geographic Quadrant, and Area Education Agency.

The sample population for this study included public Iowa school districts with single kindergarten through sixth grade attendance centers. This represented one hundred seventy-five of the four hundred thirty-six districts in the state. One hundred twenty-four returned usable data and were included in this study. This chapter will draw some conclusions from the research data, and make some recommendations. Recommendations for further study will conclude the chapter.

Conclusions

1. Schools with split duty administration are slightly smaller in enrollment, have higher per pupil expenditures, and derive a smaller percentage to their revenue fund from state contribution.

The data indicated that schools with split duty administrators average about 98 students less than those schools with full time administrators. The mean for split duty schools was 173 students while the mean for full time administrators was 271. Per pupil expenditures tended to be a little greater for the split duty administrator, $3,935, as opposed to $3,769 for the full time administration schools. The percentage of state contribution varied significantly between the two school types. School districts with

split duty elementary administration received a mean state contribution percentage to their revenue budget of 34.7%. School districts with full time elementary administration received a mean contribution of41.2%.

2. There was no difference in student achievement between buildings with split duty administration and full time administration in these selected Iowa schools.

The mean achievement score for schools with split duty administrators was 6.84 while the mean for fulltime administration was 6.90.

3. There is little difference in student achievement by state geographic quadrant in these selected Iowa schools.

Achievement scores by quadrants were very consistent. The grand mean was 6.87. The mean for the northwest quadrant was 6.87, the northeast, 6.90, the southeast, 6.63, and the southwest, 6.96.

4. There is little difference in student achievement by the fifteen Area Education Agencies in these selected Iowa schools.

All of the Area Education Agencies calculated means +/- approximately four months from the grand mean of 6.87.

5. Socioeconomic status does not correlate with academic achievement in these selected Iowa schools.

Achievement scores by quadrant were very consistent. The largest deviation from the grand mean of 6.87 was .24. while the socioeconomic status varied less than 5% representing different quadrants.

6. Ten basic school and economic variables have very weak predictive value for student achievement in these selected Iowa schools.

The cumulative predictive value of the ten dependent variables included in the regression for predicting student achievement is only slightly less than 11 1/2 percent. The ten variables included state contribution, certified staff experience, town size, pupil mobility, transportation time, average daily attendance, pupil teacher ratio, socioeconomic status, per pupil expenditure, and school size.

Recommendations

1. The Department of Education should reconsider the rules prohibiting school districts from combining the administrative positions of superintendent and elementary school principal.
2. The State legislature should examine the funding formula in Iowa to determine the equity of burden on individual taxpayers in support of their school districts.
3. School district consolidation decisions should consider the findings of this research and the effect the proposed consolidation would have on the variables treated in this study.

Recommendations for Further Research

This study looked only at public schools with single elementary attendance centers within a school district with a grade range of kindergarten through sixth grade. All of these districts were in Iowa. Although this study reported some interesting findings, Further study should be done in other states with the same sample limitations to see if similar findings would result. As financial implications of public

funding for education become even more complex, the small rural districts are the ones most likely to be significantly affected. The additional studies could make this research more generalizable. New studies might also be conducted using more or different reporting grades, achievement factors, or other dependent measures. As school district consolidations continue across the nation additional data is needed for schools to restructure in a manner that is consistent with quality education. The regression analysis indicates that for the buildings used for the purpose of this study, the dependent measures chosen for the study do not have a significant effect on student achievement. It is important for researchers to continue to study what factors do make a difference in student achievement, prior to massive reorganizations.

BIBLIOGRAPHY

Andrews, Richard L.; et al., "Principal Roles, Other In-School Variables, and Academic Achievement by Ethinicity and SES," Paper presented to the annual meeting of the American Educational Research Association, 16-20 April 1986, (San Francisco, CA), EDRS, ED268664, microfiche

Benson, Gerald P.: et al., "Mobility in Sixth graders as Related to achievement, Adjustment, and Socioeconomic Status," Psychology In The Schools 16, nO. 3 (1979): 444-47

Coleman, J.S.; Campbell, E.A.; Hobson, C.J.; Macpartland, J.; Mood, A.M.; Weinfeld, F.D.; York, R.L. Equality of Educational Opportunity. Washington, D.C.: Government Printing Office, 1966, p. 316

Creamer, Mary; Lorentz, Jeffery L., "Effects of Teacher Structure, Teacher Affect, Cognitive Levels of Questions, Group Size and Student Social Status on Reading Achievement," Paper presented at the annual meeting of the National Reading Conference, November 29-December 1, 1979, (San Antonio, TX), EDRS, ED185517, microfiche

Edington, Everett D.; Martellaro, Helena C., "Variables Affecting Academic Achievement in Nwe Mexico Schools," Paper presented at the annual meeting of the American Educational Research Association, 23-27 April 1984, (New Orleans, LA), EDRS, ED271267, microfiche

Fox, Candace: Gallimore, Ronald, The Relationship of Preschool Experience and Socioeconomic Status to Kindergarten and First Grade Achievement, Technical Report #65, (Kamehameha Schools, Honolulu, Hawaii. Kamehameha Early Education Project.), 1976, EDRS, ED158864, microfiche

Iowa Administrative Code, section 256.17. and 256.670-4.4(4), 1835, 1988

Martellaro, Helena C.; Edington, Everett, "Relationship of School Enrollment Size to Academic Achievement in New Mexico," Paper presented at the annual meeting of the Rural Education Association, 16-18 October, 1983, (Manhattan, KS), EDRS, ED234956, microfiche

Matuszek, Paula; Haskin, Christine, "Who Are The Disadvantaged and What Should We Do For Them? The Relationship of Family Variables to Achievement and Some Implications for Educational Programming," Paper presented at the annual meeting of the American Educational Research Association, 1978, (Toronto, Ontario), EDRS, ED171438, microfiche

Miller, John W.; et al., "Public Elementary Schools Which Deviate from the Traditional SES_Achievement Relationship," Education Research Quarterly 10, no. 3 (1986): 31-50

Moody, Lamar; Amos, Nil G., The Impact of Principal Involvement in Instructional Planning with Teacher Teams on Academic Achievement of Elementary School Pupils. Mississippi State University, State College, Bureau of Educational Research, 1975, EDRS, ED116298

Report of National Commission on Excellence in Education, A Nation At Risk: The Imperative for Educational Reform. Superintendent of Documents, U.S. Government Printing Office, Washington D.C., 1984

Rohr, Harry Philip, "An Investigation of the Relationship Between Size of Elementary Schools and Academic Achievement," (Ed.D. diss., Virginia Polytechnic Institute and State University, 1980, 1-3

Shakiba-Nejad, Hadi; Yellin, David, Socioeconomic Status, Academic Achievement and Teacher Response, 1981, 1, Dialog2, ERIC, ED231754

Smith, S. Marshall. Equality of Educational Opportunity: The Basic Findings Reconsidered. In F. Mostseller, and D.D. Moynihan. On Equality of Educational Opportunity. New York: Vintage Books, 1972

Taylor, Robert Lewis, "A Two-Year Study of the Effect of Absenteeism and Mobility on the Sixth Grade Achievement in an Integrated School District," (Ph.D. diss., University of Michigan, 1980), vol. 41/05-A, Dissertation Abstracts International, 35, Dialog2

Walberg, Herbert J.; Fowler, William J., Jr., Expenditures and Size Efficiencies of Public School Districts, 1986, 1, Dialog2, ERIC, ED274471

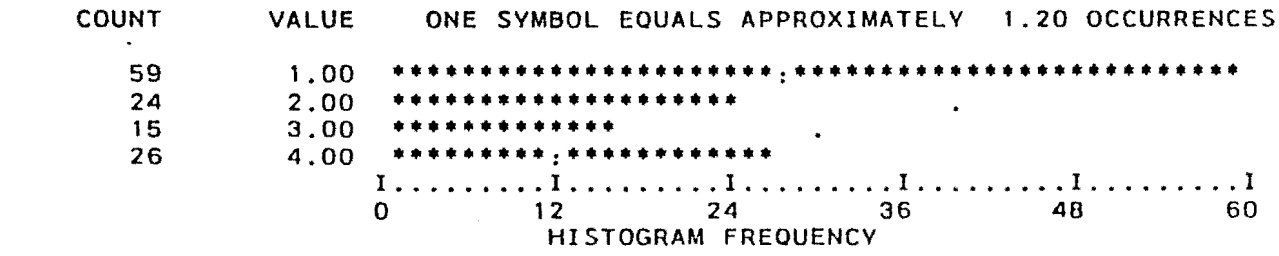
White, Karl R., "The Relationship Between Socioeconomic Status and Academic Achievement." Paper presented at the annual meeting of the American Educational Research Association, 12 April 1979, (San Francisco, CA), EDRS, ED171871, microfiche

Wilson, Alan B., "Social Class and Equal Educational Opportunity. Harvard Educational Review. 1968, 3877-84

Yap, Kim Onn, "Promoting Evaluation Use Through Technical Assistance: An SEA Example," Paper presented at the annual meeting of the American Educational Research Association, 67, 11-15 April, 1983, ERIC, ED229433

APPENDIX A

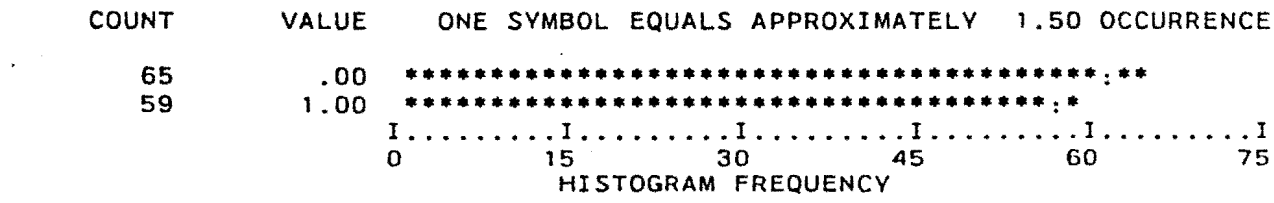
QUAD GEOGRAPHIC QUADRANT



MEAN	2.065	STD ERR	.108	MEDIAN	2.000
MODE	1.000	STD DEV	1.201	VARIANCE	1.443
KURTOSIS	-1.221	S E KURT	.431	SKEWNESS	.618
S E SKEW	.217	RANGE	3.000	MINIMUM	1.000
MAXIMUM	4.000	SUM	256.000		

VALID CASES	124	MISSING CASES	0

ADMINT ADMINISTRATIVE INTENSITY



MEAN	.476	STD ERR	.045	MEDIAN	.000
MODE	.000	STD DEV	.501	VARIANCE	.251
KURTOSIS	-2.023	S E KURT	.431	SKEWNESS	.098
S E SKEW	.217	RANGE	1.000	MINIMUM	.000
MAXIMUM	1.000	SUM	59.000		

VALID CASES	124	MISSING CASES	0

TWNSZ TOWN SIZE

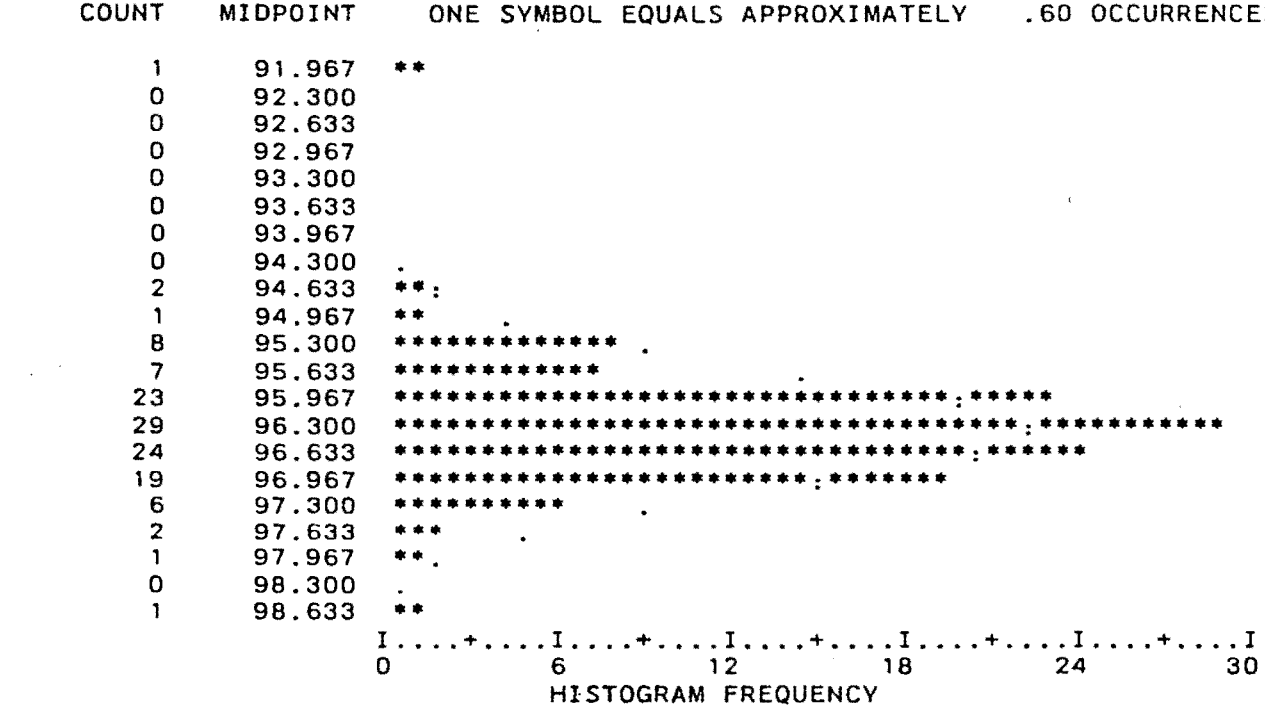
COUNT	MIDPOINT	ONE SYMBOL EQUALS APPROXIMATELY .40 OCCURRENCES
14	199	************:**********
19	420	****************:******************************
18	641	******************:**************************
13	862	********************:************
11	1083	**********************:*****
7	1304	****************** .
8	1525	******************** .
3	1746	******** .
6	1967	*************** .
4	2188	********** .
3	2409	******** .
1	2630	*** .
0	2851	.
1	3072	*** .
2	3293	*****.
4	3514	***:******
3	3735	**:*****
0	3956	.
3	4177	:*******
0	4398	.
4	4619	:*********

I....+....I....+....I....+....I....+....I....+....I....+....I
0 4 8 12 16 20
HISTOGRAM FREQUENCY

MEAN	1357.121	STD ERR	106.383	MEDIAN	901.500
MODE	279.000	STD DEV	1184.630	VARIANCE	1403348.82
KURTOSIS	.935	S E KURT	.431	SKEWNESS	1.366
S E SKEW	.217	RANGE	4632.000	MINIMUM	93.000
MAXIMUM	4725.000	SUM	168283.000		

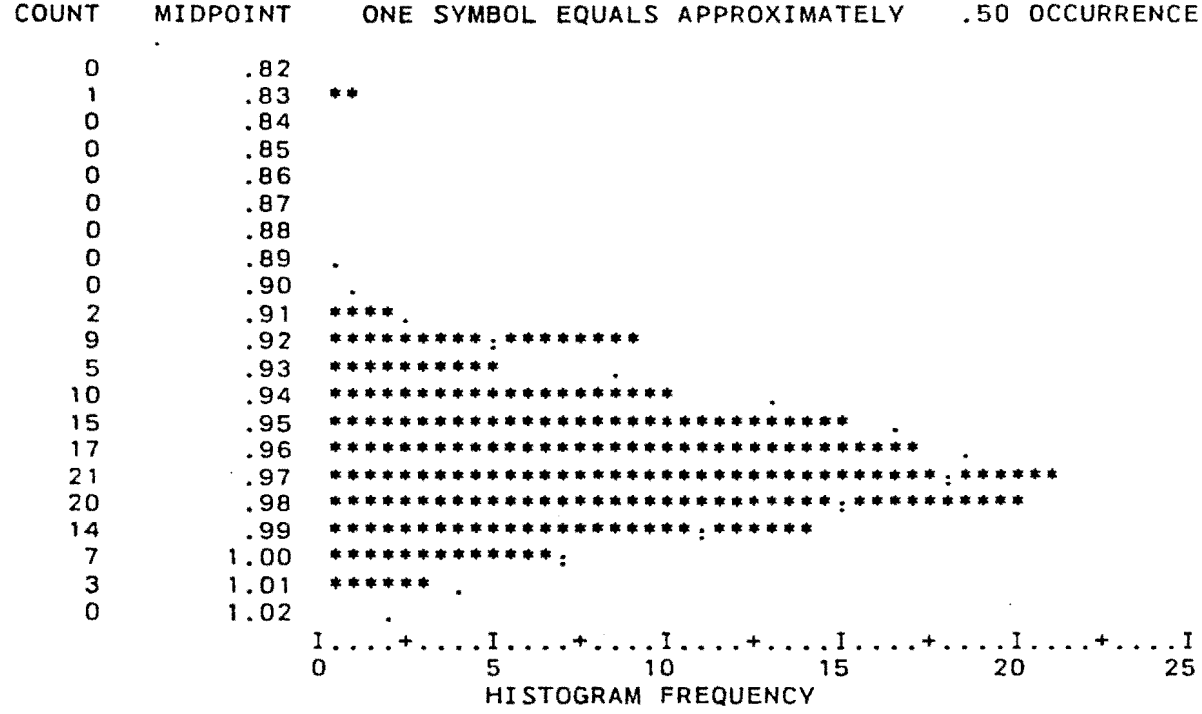
VALID CASES	124	MISSING CASES	0

ADA AVERAGE DAILY ATTENDENCE



MEAN	96.312	STD ERR	.067	MEDIAN	96.300
MODE	96.300	STD DEV	.741	VARIANCE	.549
KURTOSIS	9.988	S E KURT	.431	SKEWNESS	-1.610
S E SKEW	.217	RANGE	6.800	MINIMUM	91.900
MAXIMUM	98.700	SUM	11942.700		

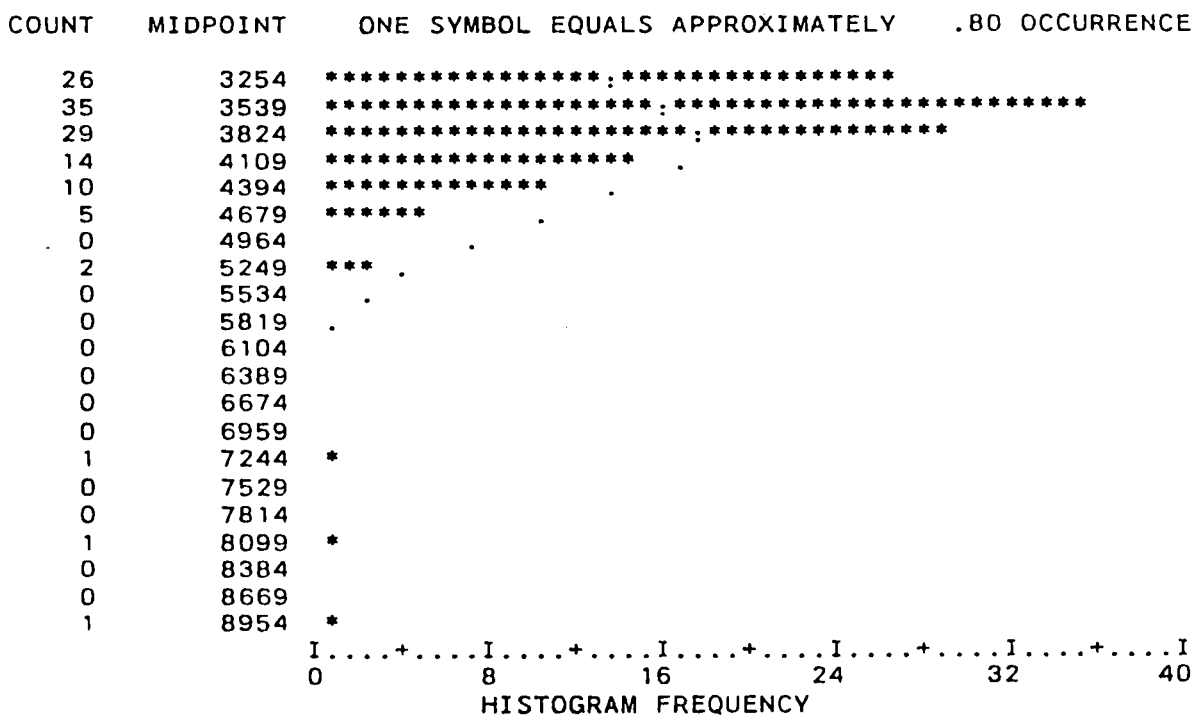
VALID CASES	124	MISSING CASES	0



PUBMOB PUPIL MOBILITY

MEAN	.963	STD ERR	.002	MEDIAN	.970
MODE	.970	STD DEV	.027	VARIANCE	.001
KURTOSIS	3.907	S E KURT	.431	SKEWNESS	-1.172
S E SKEW	.217	RANGE	.180	MINIMUM	.830
MAXIMUM	1.010	SUM	119.410		

VALID CASES	124	MISSING CASES	0

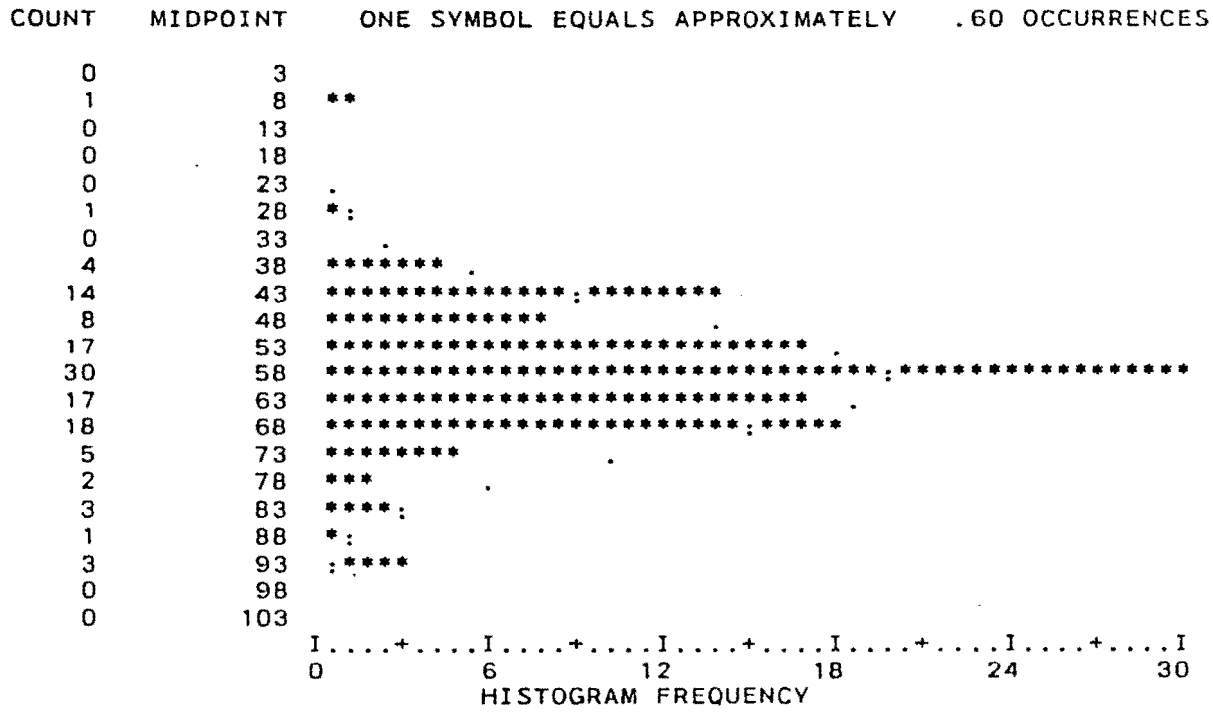


PPEXP PER PUPIL EXPENDITURE

MEAN	3856.177	STD ERR	72.600	MEDIAN	3693.500
MODE	3323.000	STD DEV	808.438	VARIANCE	653571.919
KURTOSIS	20.785	S E KURT	.431	SKEWNESS	4.025
S E SKEW	.217	RANGE	5973.000	MINIMUM	3117.000
MAXIMUM	9090.000	SUM	478166.000		

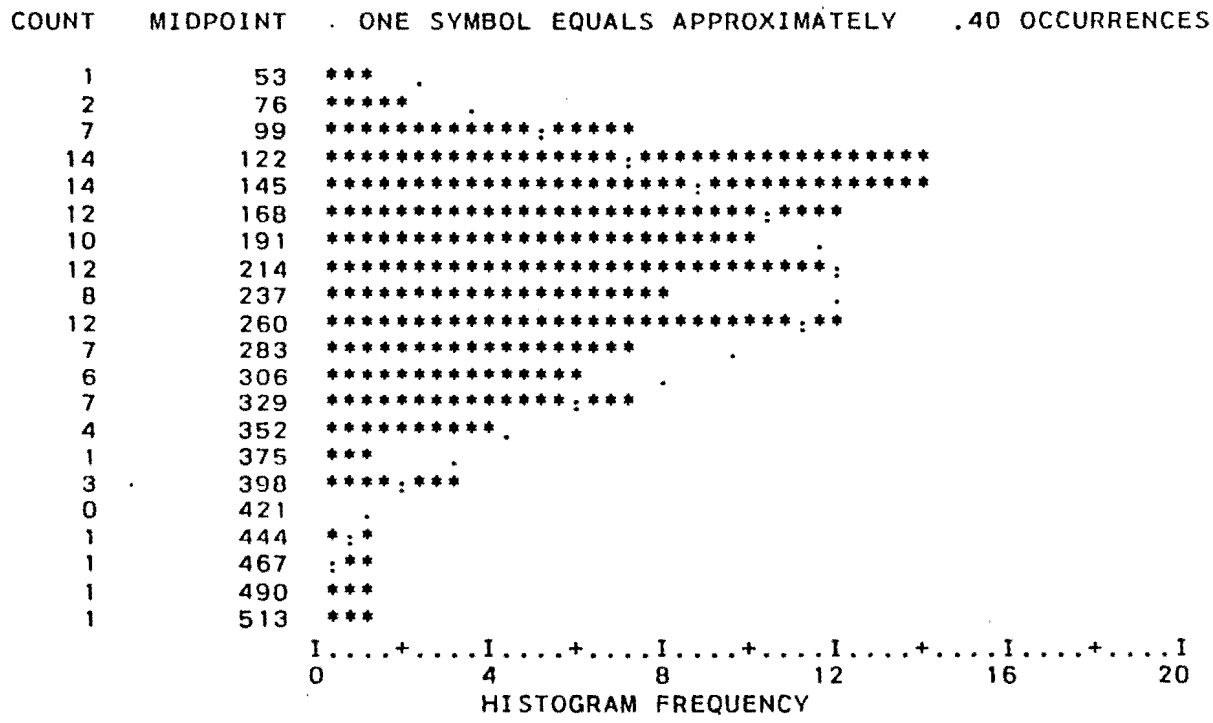
VALID CASES	124	MISSING CASES	0

TRANS TRANSPORTATION TIME



MEAN	58.527	STD ERR	1.132	MEDIAN	58.650
MODE	57.500	STD DEV	12.603	VARIANCE	158.826
KURTOSIS	1.964	S E KURT	.431	SKEWNESS	-.002
S E SKEW	.217	RANGE	85.200	MINIMUM	10.200
MAXIMUM	95.400	SUM	7257.400		

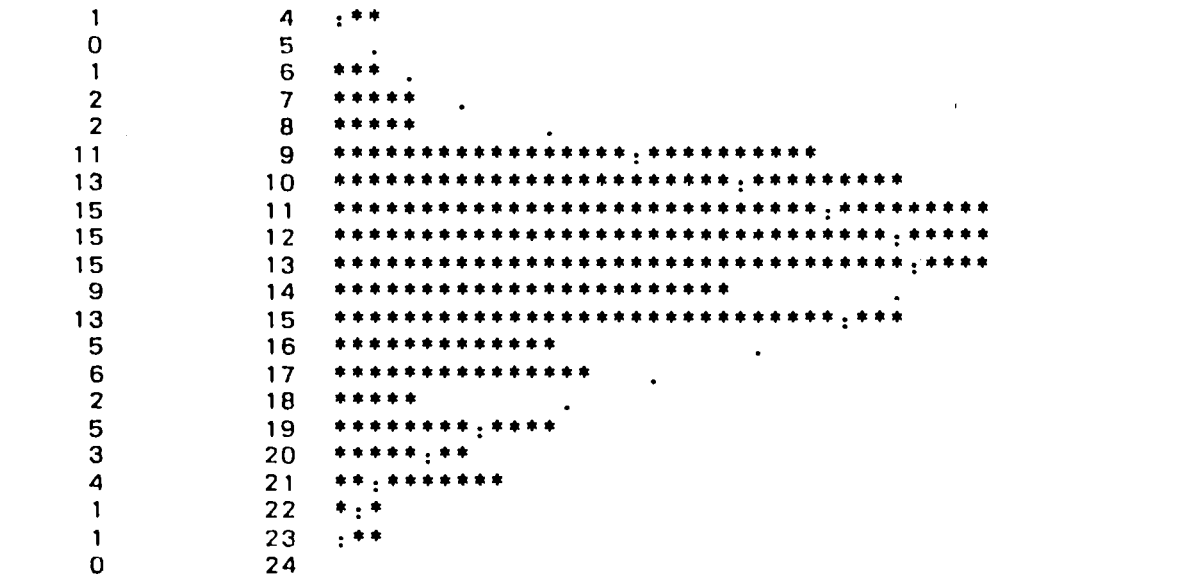
VALID CASES	124	MISSING CASES	0



MEAN	219.790	STD ERR	8.431	MEDIAN	208.000
MODE	117.000	STD DEV	93.884	VARIANCE	8814.135
KURTOSIS	.404	S E KURT	.431	SKEWNESS	.762
S E SKEW	.217	RANGE	472.000	MINIMUM	47.000
MAXIMUM	519.000	SUM	27254.000		

VALID CASES	124	MISSING CASES	0

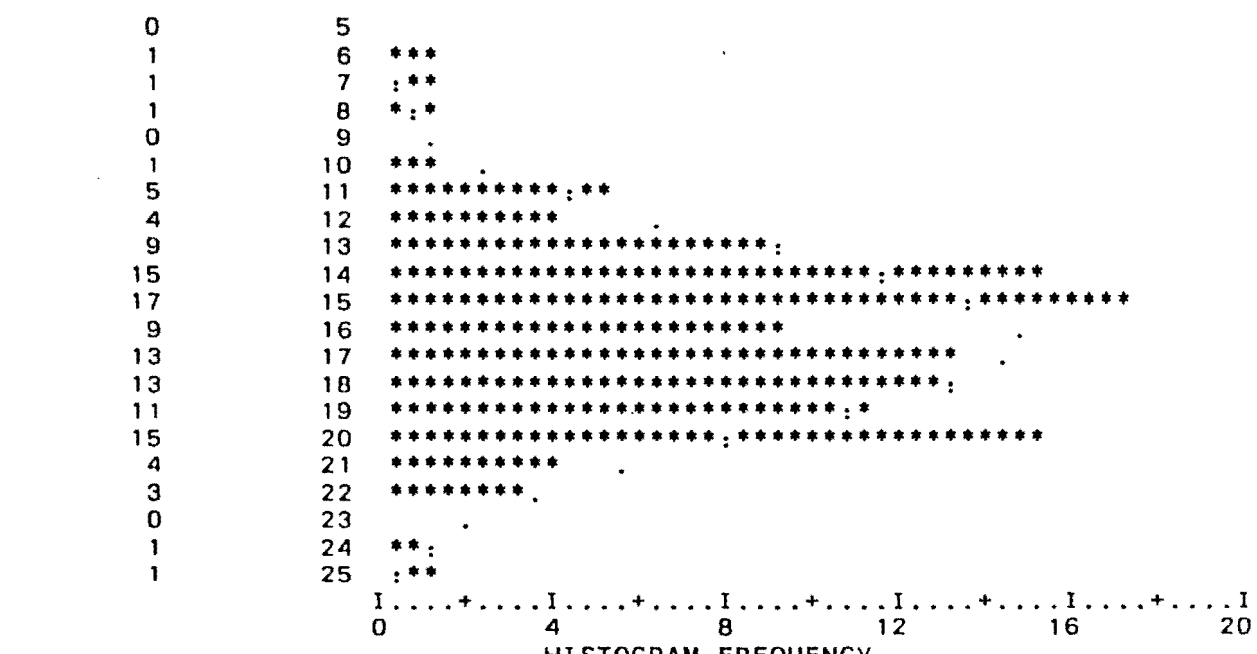
CSTAFFEX CERTIFIED STAFF EXPERIENCE



MEAN	13.118	STD ERR	.325	MEDIAN	12.600
MODE	11.900	STD DEV	3.623	VARIANCE	13.126
KURTOSIS	.140	S E KURT	.431	SKEWNESS	.526
S E SKEW	.217	RANGE	19.200	MINIMUM	4.000
MAXIMUM	23.200	SUM	1626.600		

VALID CASES	124	MISSING CASES	0

PTRA PUPIL TEACHER RATIO

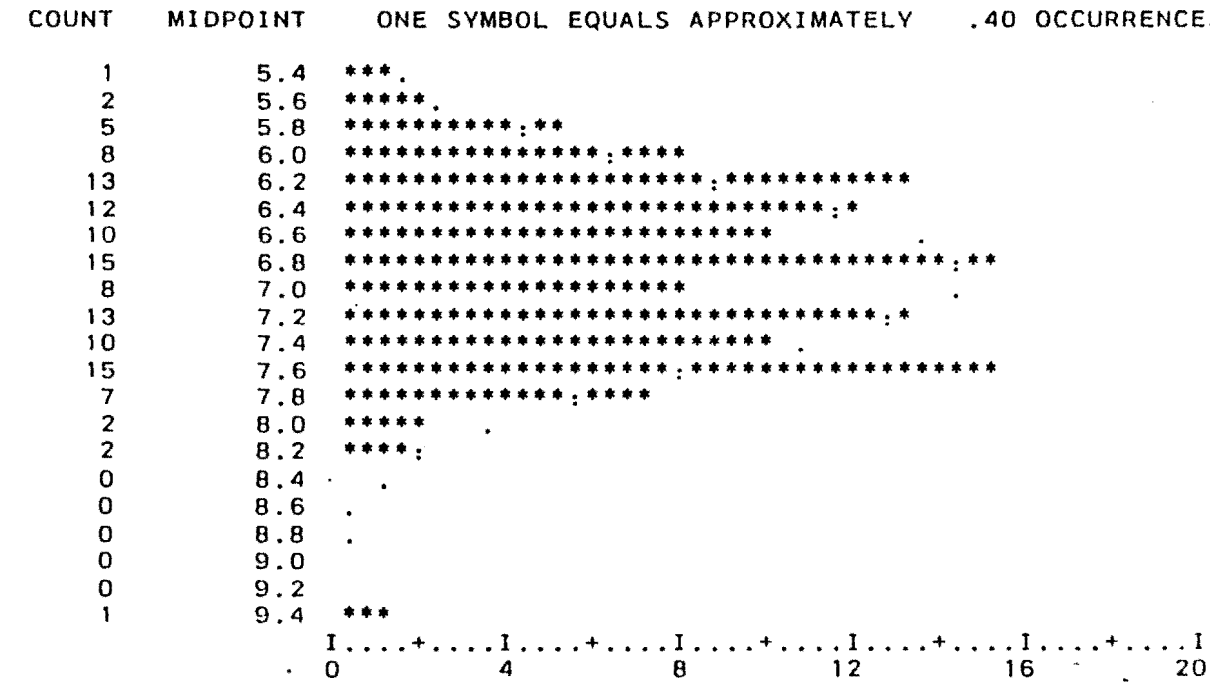


MEAN	16.285	STD ERR	.299	MEDIAN	16.400
MODE	15.400	STD DEV	3.333	VARIANCE	11.110
KURTOSIS	.448	S E KURT	.431	SKEWNESS	-.313
S E SKEW	.217	RANGE	19.100	MINIMUM	5.700
MAXIMUM	24.800	SUM	2019.400		

VALID CASES	124	MISSING CASES	0

ACH ACHIEVEMENT FACTOR

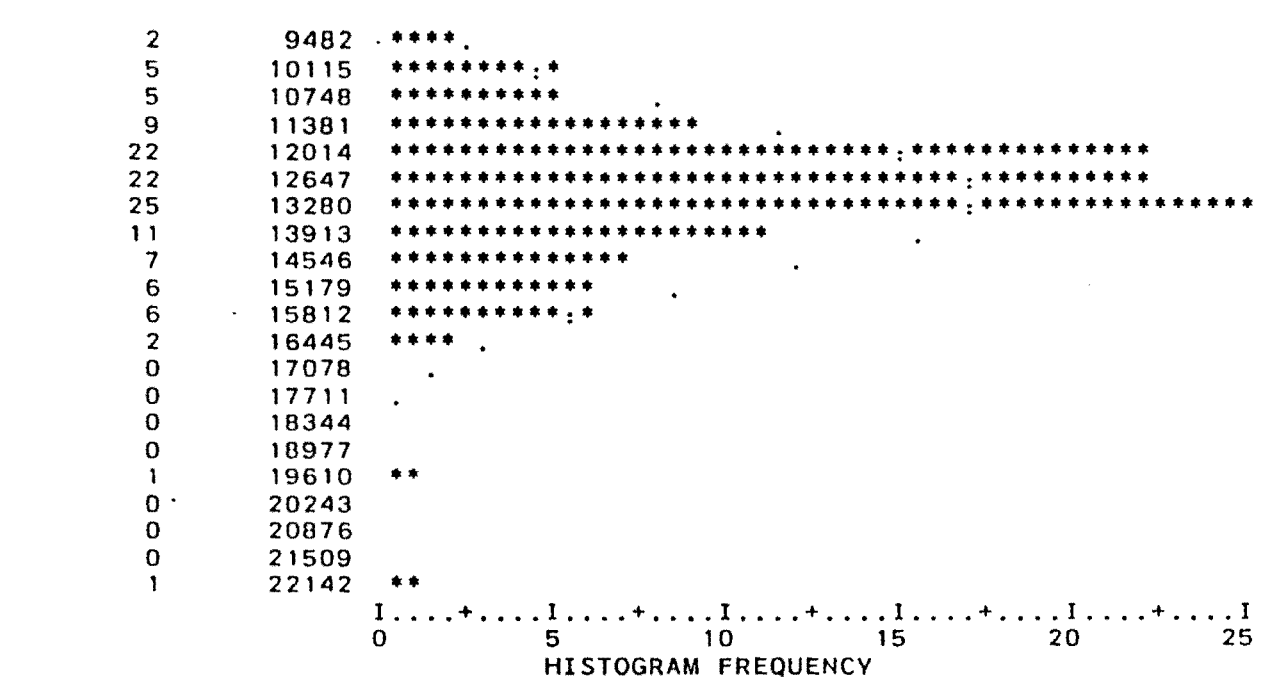
7.97	1	.8	.8	97.6
8.20	1	.8	.8	98.4
8.29	1	.8	.8	99.2
9.46	1	.8	.8	100.0
TOTAL	124	100.0	100.0	



MEAN	6.872	STD ERR	.061	MEDIAN	6.855
MODE	6.790	STD DEV	.681	VARIANCE	.464
KURTOSIS	.454	S E KURT	.431	SKEWNESS	.343
S E SKEW	.217	RANGE	4.020	MINIMUM	5.440
MAXIMUM	9.460	SUM	852.070		

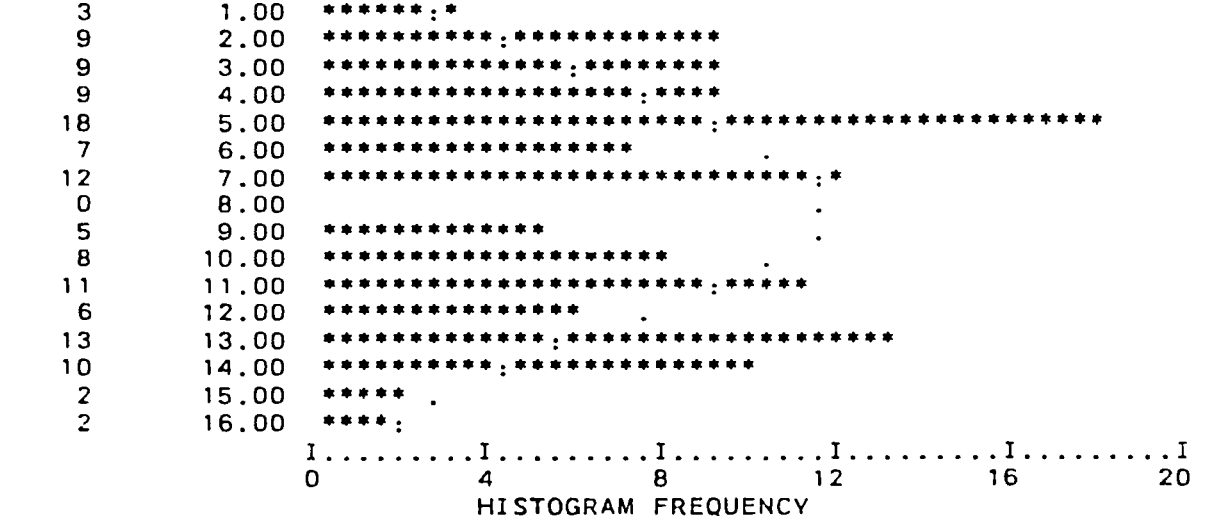
VALID CASES	124	MISSING CASES	0

SES SOCIOECONOMIC STATUS



MEAN	13026.823	STD ERR	161.419	MEDIAN	12790.500
MODE	12531.000	STD DEV	1797.482	VARIANCE	3230942.05
KURTOSIS	6.359	S E KURT	.431	SKEWNESS	1.587
S E SKEW	.217	RANGE	13289.000	MINIMUM	9167.000
MAXIMUM	22456.000	SUM	1615326.00		

VALID CASES	124	MISSING CASES	0

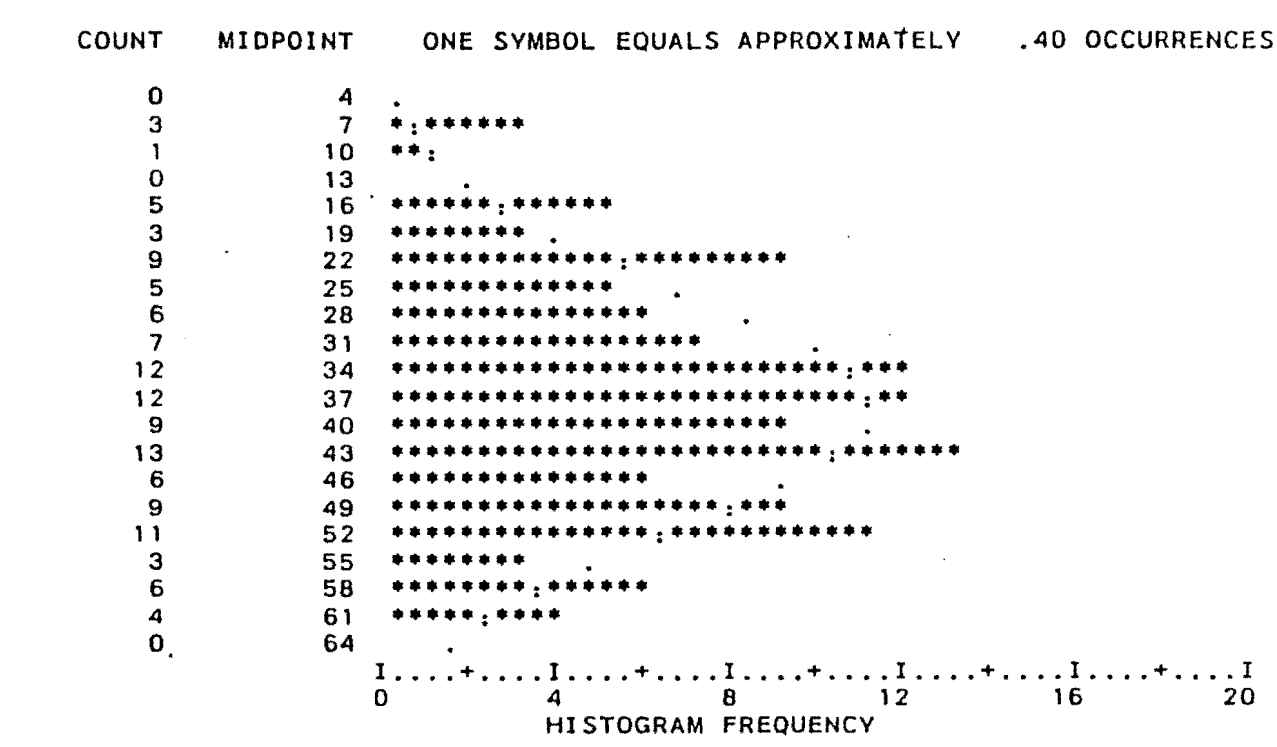


AEA AREA EDUCATION AGENCY

MEAN	7.976	STD ERR	.378	MEDIAN	7.000
MODE	5.000	STD DEV	4.215	VARIANCE	17.764
KURTOSIS	-1.313	S E KURT	.431	SKEWNESS	.130
S E SKEW	.217	RANGE	15.000	MINIMUM	1.000
MAXIMUM	16.000	SUM	989.000		

VALID CASES 124 MISSING CASES 0

STATCON STATE CONTRIBUTION



MEAN	37.900	STD ERR	1.173	MEDIAN	38.035
MODE	42.550	STD DEV	13.064	VARIANCE	170.675
KURTOSIS	-.508	S E KURT	.431	SKEWNESS	-.264
S E SKEW	.217	RANGE	55.270	MINIMUM	6.720
MAXIMUM	61.990	SUM	4699.600		

VALID CASES	124	MISSING CASES	0

APPENDIX B

TABLE 4.1

STATISTICAL BREAKDOWN BY
ADMINISTRATIVE INTENSITY

	ENTIRE POPULATION (N=124)		SPLIT ADMINISTRATION (N=65)		FULLTIME ADMINISTRATION (N=59)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS						
Pupil Teacher Ratio	16.2855	3.3332	15.9277	3.3625	16.6797	3.2838
Certified Staff Experience	13.1177	3.6730	12.7354	3.5176	13.5390	3.7200
School Size	219.7903	93.8836	173.0615	62.0284	271.2712	96.4542
STUDENT FACTORS						
Average Daily Attendance	96.3121	.7410	96.3323	.7916	96.2898	.6870
Pupil Mobility	.9630	.0256	.9628	.0298	.9632	.0227
Achievement	6.8715	.6814	6.8452	.6680	6.9005	.7004
FISCAL FACTORS						
Per Pupil Expenditures	3856.1774	808.4380	3935.1538	819.2213	3769.1695	794.2179
State Contribution	37.9000	13.0643	34.7314	13.8193	41.1705	11.4220
Socio Economic Status	13026.8226	1797.4821	12428.1231	1260.8281	13686.4068	2062.3855
GEOGRAPHIC FACTORS						
Town Size	1357.1210	1184.6302	1180.2000	1209.2161	1552.0339	1135.2820
Transportation Time	58.5274	12.6026	58.2323	12.0803	58.8525	13.2509

TABLE 4.2

STATISTICAL BREAKDOWN BY
STATE QUADRANTS ONE AND TWO

	ENTIRE POPULATION (N=124)		NORTHWEST QUADRANT 1 (N=59)		NORTHEAST QUADRANT 2 (N=24)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS						
Pupil Teacher Ratio	16.2855	3.3332	15.7186	3.5755	17.0024	2.5227
Certified Staff Experience	13.1177	3.6730	13.0661	3.8218	14.6000	3.7667
School Size	219.7903	93.8836	194.8475	98.0308	252.5000	69.3924
STUDENT FACTORS						
Average Daily Attendance	96.3121	.7410	96.3712	.9133	96.4042	.5425
Pupil Mobility	.9630	.0256	.9659	.0268	.9692	.0241
Achievement	6.8715	.6814	6.8781	.6503	6.9037	.7884
FISCAL FACTORS						
Per Pupil Expenditures	3856.1774	808.4380	4073.2542	1068.4836	3720.2917	338.9228
State Contribution	37.9000	13.0643	30.6098	11.5846	45.3996	13.8940
Socio Economic Status	13026.8226	1797.4821	12928.8305	1359.0661	13641.0833	1515.5211
GEOGRAPHIC FACTORS						
Town Size	1357.1210	1184.6302	1423.1017	1396.3881	1417.0000	983.0549
Transportation Time	58.5274	12.6026	57.8017	9.9901	55.4292	12.8914

TABLE 4.3

STATISTICAL BREAKDOWN BY
STATE QUADRANTS THREE AND FOUR

	ENTIRE POPULATION (N=124)		SOUTHEAST QUADRANT 3 (N=15)		SOUTHWEST QUADRANT 4 (N=26)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS						
Pupil Teacher Ratio	16.2855	3.3332	17.2600	2.9272	16.3462	3.5386
Certified Staff Experience	13.1177	3.6730	12.8533	3.2118	12.0192	2.9074
School Size	219.7903	93.8836	257.7333	110.3886	224.3077	80.2236
STUDENT FACTORS						
Average Daily Attendance	96.3121	.7410	96.2467	.5370	96.1308	.5297
Pupil Mobility	.9630	.0256	.9480	.0257	.9592	.0262
Achievement	6.8715	.6814	6.6320	.6413	6.9650	.6755
FISCAL FACTORS						
Per Pupil Expenditures	3856.1774	808.4380	3578.4667	436.1433	3649.2308	367.3926
State Contribution	37.9000	13.0643	47.3227	7.3489	42.0842	8.3443
Socio Economic Status	13026.8226	1797.4821	13581.6667	2953.7597	12362.0769	1892.8829
GEOGRAPHIC FACTORS						
Town Size	1357.1210	1184.6302	1104.2000	783.0161	1298.0385	1045.2519
Transportation Time	58.5274	12.6026	60.9867	13.6824	61.6154	16.3752

TABLE 4.4

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 1, 2 AND 3

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 1 (N=3)		AREA EDUCATION AGENCY 2 (N=9)		AREA EDUCATION AGENCY 3 (N=9)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	19.5667	1.9553	14.9444	3.2319	15.7222	3.9079
Certified Staff Experience	13.1177	3.6730	15.2333	1.0405	13.3889	3.5512	12.5333	3.1548
School Size	219.7903	93.8836	305.6667	71.5984	154.0000	44.8665	129.7778	40.8068
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.7333	.6658	96.4556	.4640	96.7556	.6616
Pupil Mobility	.9630	.0256	.9767	.0058	.9667	.0250	.9711	.0196
Achievement	6.8715	.6814	6.5433	.4188	7.2578	.6493	7.2022	.6876
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3777.3333	401.0204	3953.6667	588.5357	4225.5556	608.0703
State Contribution	37.9000	13.0643	46.3333	9.4271	18.5444	8.2938	22.5844	8.7894
Socio Economic Status	13026.8226	1797.4821	11798.3333	254.5375	12853.8889	826.4452	12201.6667	655.3278
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	2807.0000	2039.5002	1441.2222	1453.9738	1726.7778	1983.2682
Transportation Time	58.5274	12.6026	67.6667	15.0231	54.1000	7.3634	59.4556	8.9045

TABLE 4.5

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 4, 5 AND 6

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 4 (N=9)		AREA EDUCATION AGENCY 5 (N=18)		AREA EDUCATION AGENCY 6 (N=7)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.5556	2.2040	15.0333	4.3065	18.1286	3.5551
Certified Staff Experience	13.1177	3.6730	14.6333	2.9799	14.1500	3.9673	12.5571	3.9660
School Size	219.7903	93.8836	298.8889	140.1931	188.8333	83.6732	222.4286	74.3390
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.8778	.6099	96.2167	.8972	96.4714	.4572
Pupil Mobility	.9630	.0256	.9722	.0139	.9672	.0216	.9729	.0111
Achievement	6.8715	.6814	7.1144	.7065	6.5628	.5623	6.9371	.4849
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3584.4444	297.9770	4281.6111	1260.3379	3344.8571	183.9759
State Contribution	37.9000	13.0643	35.9356	7.5964	29.6850	7.7906	34.3786	10.3595
Socio Economic Status	13026.8226	1797.4821	13112.7778	981.3450	12936.7778	766.1816	13605.8571	1299.0282
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	2158.2222	1692.4807	997.6667	864.0131	1097.5714	541.5191
Transportation Time	58.5274	12.6026	53.4000	7.7558	62.8833	10.4598	60.7571	17.7695

TABLE 4.6

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 7, 9* AND 10

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 7 (N=12)		AREA EDUCATION AGENCY 9 (N=5)		AREA EDUCATION AGENCY 10 (N=8)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.4833	2.2607	15.8200	3.5492	17.1000	2.1514
Certified Staff Experience	13.1177	3.6730	14.7833	3.7675	14.8600	4.0636	12.0625	3.7420
School Size	219.7903	93.8836	275.6667	65.7769	205.6000	72.8581	271.3750	144.8703
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.2750	.5345	95.8800	.9094	95.6875	1.5643
Pupil Mobility	.9630	.0256	.9667	.0277	.9560	.0321	.9550	.0307
Achievement	6.8715	.6814	6.9242	.9358	6.7720	.7790	6.4887	.7245
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3766.8333	300.4566	4148.8000	338.1127	3534.7500	245.1948
State Contribution	37.9000	13.0643	49.5492	8.7720	48.9680	7.6901	49.1825	9.6143
Socio Economic Status	13026.8226	1797.4821	14107.2500	1425.2823	12589.6000	842.9011	14780.0000	3443.6511
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	1505.8333	618.2938	680.0000	438.3874	1226.8750	954.9010
Transportation Time	58.5274	12.6026	53.1667	12.4249	61.3200	12.1863	53.1500	11.8677

* There is no Area Education Agency 8 in Iowa

TABLE 4.7

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 11, 12 AND 13

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 11 (N=11)		AREA EDUCATION AGENCY 12 (N=6)		AREA EDUCATION AGENCY 13 (N=13)	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.	$\overline{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.6909	3.6344	15.5333	1.7259	15.9231	3.3539
Certified Staff Experience	13.1177	3.6730	9.8545	3.2219	13.5333	4.9549	12.2615	3.3210
School Size	219.7903	93.8836	223.5455	82.7108	199.0000	71.7273	215.0000	57.6223
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.3182	.4729	96.2500	.4680	96.0231	.5918
Pupil Mobility	.9630	.0256	.9618	.0483	.9567	.0234	.9515	.0273
Achievement	6.8715	.6814	6.7455	.5161	6.9367	.4838	7.0685	.6952
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	4270.9091	1686.5062	3640.1667	225.0204	3660.2308	295.2686
State Contribution	37.9000	13.0643	41.2955	17.0291	42.6750	7.0846	38.5715	6.7376
Socio Economic Status	13026.8226	1797.4821	13907.3636	2504.2517	12237.0000	1569.5282	13270.3077	1456.3432
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	1237.3636	1115.6612	1083.6667	1346.4565	1236.9231	1112.7054
Transportation Time	58.5274	12.6026	52.4364	8.1271	57.6000	11.2965	60.0385	8.2873

TABLE 4.8

STATISTICAL BREAKDOWN BY AREA EDUCATION AGENCIES 14, 15 AND 16

	ENTIRE POPULATION (N=124)		AREA EDUCTION AGENCY 14 (N=10)		AREA EDUCATION AGENCY 15 (N=2)		AREA EDUCATION AGENCY 16 (N=2)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
SCHOOL FACTORS								
Pupil Teacher Ratio	16.2855	3.3332	16.3700	3.8494	20.2000	2.4042	18.3000	2.5456
Certified Staff Experience	13.1177	3.6730	12.5800	2.0890	12.8500	5.1619	12.3000	1.8385
School Size	219.7903	93.8836	218.5000	105.0188	199.5000	14.8492	299.0000	45.2548
STUDENT FACTORS								
Average Daily Attendance	96.3121	.7410	96.3400	.3836	96.5500	.2121	96.2500	.0707
Pupil Mobility	.9630	.0256	.9610	.0233	.9300	.0141	.9450	.0071
Achievement	6.8715	.6814	6.8490	.7484	6.9550	.7425	6.3050	.5586
FISCAL FACTORS								
Per Pupil Expenditures	3856.1774	808.4380	3672.5000	470.3744	3264.0000	45.2548	3298.5000	218.4960
State Contribution	37.9000	13.0643	43.8960	5.3430	48.5750	4.1790	55.6550	5.4235
Socio Economic Status	13026.8226	1797.4821	10760.6000	990.6220	10306.5000	17.6667	15351.0000	121.6224
GEOGRAPHIC FACTORS								
Town Size	1357.1210	1184.6302	1397.2000	1080.1872	899.0000	193.7473	1518.5000	741.7550
Transportation Time	58.5274	12.6026	66.1600	24.1937	71.1000	10.3238	59.0500	.0707

TABLE 4.9

SIGNIFICANT
ANALYSIS OF VARIANCE
FOR ADMINISTRATINE INTENSITY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
School Size					
MAIN EFFECTS	298299.134	1	298299.134	46.310	0.000*
ADMINISTRATIVE INTENSITY	298299.134	1	298299.134	46.310	0.000*
EXPLAINED	298299.134	11	298299.134	46.310	0.000*
RESIDUAL	785839.415	122	6441.307		
TOTAL	1084138.548	123	8814.135		
State Contribution					
MAIN EFFECTS	6272.500	1	2090.833	17.044	0.000*
ADMINISTRATIVE INTENSITY	6272.500	1	2090.833	17.044	0.000*
EXPLAINED	6272.500	11	2090.833	17.044	0.000*
RESIDUAL	14720.531	122	122.671		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	48966698.844	1	48966698.844	17.145	0.000*
ADMINISTRATIVE INTENSITY	48966698.844	1	48966698.844	17.145	0.000*
EXPLAINED	48966698.844	11	48966698.844	17.145	0.000*
RESIDUAL	348439173.253	122	2856058.797		
TOTAL	397405872.097	123	3230942.050		

* Significant at .05

TABLE 4.9.1

ANALYSIS OF VARIANCE
FOR ADMINISTRATIVE INTENSITY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
SCHOOL FACTORS					
Pupil Teacher Ratio					
MAIN EFFECTS	17.488	1	17.488	1.582	.211
ADMINISTRATIVE INTENSITY	17.488	1	17.488	1.582	.211
EXPLAINED	17.488	1	17.488	1.582	.211
RESIDUAL	1349.066	122	11.058		
TOTAL	1366.554	123	11.110		
Certified Staff Experience					
MAIN EFFECTS	19.972	1	19.972	1.528	.219
ADMINISTRATIVE INTENSITY	19.972	1	19.972	1.528	.219
EXPLAINED	19.972	11	19.972	1.528	.219
RESIDUAL	1594.549	122	13.070		
TOTAL	1614.521	123	13.126		
School Size					
MAIN EFFECTS	298299.134	1	298299.134	46.310	0.000*
ADMINISTRATIVE INTENSITY	298299.134	1	298299.134	46.310	0.000*
EXPLAINED	298299.134	11	298299.134	46.310	0.000*
RESIDUAL	785839.415	122	6441.307		
TOTAL	1084138.548	123	8814.135		

* significant at .05

TABLE 4.9.2

ANALYSIS OF VARIANCE
FOR ADMINISTRATIVE INTENSITY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
STUDENT FACTORS					
Average Daily Attendance					
MAIN EFFECTS	.056	1	.056	.101	.751
ADMINISTRATIVE INTENSITY	.056	1	.056	.101	.751
EXPLAINED	.056	11	.056	.101	.751
RESIDUAL	67.476	122	.553		
TOTAL	67.532	123	.549		
Pupil Mobility					
MAIN EFFECTS	0.000	1	0.000	.009	.925
ADMINISTRATIVE INTENSITY	0.000	1	0.000	.009	.925
EXPLAINED	0.000	11	0.000	.009	.925
RESIDUAL	.087	122	.001		
TOTAL	.087	123	.001		
Achievement					
MAIN EFFECTS	.095	1	.095	.202	.654
ADMINISTRATIVE INTENSITY	.095	1	.095	.202	.654
EXPLAINED	.095	11	.095	.202	.654
RESIDUAL	57.008	122	.467		
TOTAL	57.103	123	.464		

* significant at .05

TABLE 4.9.3

ANALYSIS OF VARIANCE
FOR ADMINISTRATIVE INTENSITY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
FISCAL FACTORS					
Per Pupil Expenditures					
MAIN EFFECTS	852075.330	1	852075.330	1.307	.255
ADMINISTRATIVE INTENSITY	852075.330	1	852075.330	1.307	.255
EXPLAINED	852075.330	11	852075.330	1.307	.255
RESIDUAL	79537270.767	122	651944.842		
TOTAL	80389346.097	123	653571.919		
State Contribution					
MAIN EFFECTS	6272.500	1	2090.833	17.044	0.000*
ADMINISTRATIVE INTENSITY	6272.500	1	2090.833	17.044	0.000*
EXPLAINED	6272.500	11	2090.833	17.044	0.000*
RESIDUAL	14720.531	122	122.671		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	48966698.844	1	48966698.844	17.145	0.000*
ADMINISTRATIVE INTENSITY	48966698.844	1	48966698.844	17.145	0.000*
EXPLAINED	48966698.844	11	48966698.844	17.145	0.000*
RESIDUAL	348439173.253	122	2856058.797		
TOTAL	397405872.097	123	3230942.050		

* significant at .05

TABLE 4.9.4

ANALYSIS OF VARIANCE
FOR ADMINISTRATIVE INTENSITY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
GEOGRAPHIC FACTORS					
Town Size					
MAIN EFFECTS	4276038.853	1	4276038.853	3.099	.081
ADMINISTRATIVE INTENSITY	4276038.853	1	4276038.853	3.099	.081
EXPLAINED	4276038.853	11	4276038.853	3.099	.081
RESIDUAL	168335866.332	122	1379802.183		
TOTAL	172611905.185	123	1403348.823		
Transportation Time					
MAIN EFFECTS	11.898	1	11.898	.074	.786
ADMINISTRATIVE INTENSITY	11.898	1	11.898	.074	.786
EXPLAINED	11.898	11	11.898	.074	.786
RESIDUAL	19523.709	122	160.030		
TOTAL	19535.607	123	158.826		

* significant at .05

TABLE 4.10

SIGNIFICANT
ANALYSIS OF VARIANCE
FOR QUADRANT

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
School Size					
MAIN EFFECTS	84510.449	3	28170.150	3.382	.021*
QUADRANT	84510.449	3	28170.150	3.382	.021*
EXPLAINED	84510.449	3	28170.150	3.382	.021*
RESIDUAL	999628.099	120	8330.234		
TOTAL	1084138.548	123	8814.135		
Per Pupil Expenditures					
MAIN EFFECTS	5493725.603	3	1831241.868	2.934	.036*
QUADRANT	5493725.603	3	1831241.868	2.934	.036*
EXPLAINED	5493725.603	3	1831241.868	2.934	.036*
RESIDUAL	74895620.493	120	624130.171		
TOTAL	80389346.097	123	653571.919		
State Contribution					
MAIN EFFECTS	6272.500	3	2090.833	17.044	0.000*
QUADRANT	6272.500	3	2090.833	17.044	0.000*
EXPLAINED	6272.500	3	2090.833	17.044	0.000*
RESIDUAL	14720.531	120	122.671		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	25728970.779	3	8576323.593	2.769	.045*
QUADRANT	25728970.779	3	8576323.593	2.769	.045*
EXPLAINED	25728970.779	3	8576323.593	2.769	.045*
RESIDUAL	371676901.318	120	3097307.511		
TOTAL	397405872.097	123	3230942.050		

* Significant at .05

TABLE 4.10.1

ANALYSIS OF VARIANCE
FOR QUADRANT

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
SCHOOL FACTORS					
Pupil Teacher Ratio					
MAIN EFFECTS	45.694	3	15.231	1.384	.251
QUADRANT	45.694	3	15.231	1.384	.251
EXPLAINED	45.694	3	15.231	1.384	.251
RESIDUAL	1320.860	120	11.007		
TOTAL	1366.554	123	11.110		
Certified Staff Experience					
MAIN EFFECTS	85.311	3	28.437	2.232	.088
QUADRANT	85.311	3	28.437	2.232	.088
EXPLAINED	85.311	3	28.437	2.232	.088
RESIDUAL	1529.210	120	12.743		
TOTAL	1614.521	123	13.126		
School Size					
MAIN EFFECTS	84510.449	3	28170.150	3.382	.021*
QUADRANT	84510.449	3	28170.150	3.382	.021*
EXPLAINED	84510.449	3	28170.150	3.382	.021*
RESIDUAL	999628.099	120	8330.234		
TOTAL	1084138.548	123	8814.135		

* significant at .05

TABLE 4.10.2

ANALYSIS OF VARIANCE
FOR QUADRANT

STUDENT FACTORS	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
Average Daily Attendance					
MAIN EFFECTS	1.329	3	.443	.803	.495
QUADRANT	1.329	3	.443	.803	.495
EXPLAINED	1.329	3	.443	.803	.495
RESIDUAL	66.203	120	.552		
TOTAL	67.532	123	.549		
Pupil Mobility					
MAIN EFFECTS	.005	3	.002	2.537	.060
QUADRANT	.005	3	.002	2.537	.060
EXPLAINED	.005	3	.002	2.537	.060
RESIDUAL	.081	120	.001		
TOTAL	.087	123	.001		
Achievement					
MAIN EFFECTS	1.115	3	.372	.797	.498
QUADRANT	1.115	3	.372	.797	.498
EXPLAINED	1.115	3	.372	.797	.498
RESIDUAL	55.987	120	.467		
TOTAL	57.103	123	.464		

* significant at .05

TABLE 4.10.3

ANALYSIS OF VARIANCE
FOR QUADRANT

FISCAL FACTORS	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
Per Pupil Expenditures					
MAIN EFFECTS	5493725.603	3	1831241.868	2.934	.036*
QUADRANT	5493725.603	3	1831241.868	2.934	.036*
EXPLAINED	5493725.603	3	1831241.868	2.934	.036*
RESIDUAL	74895620.493	120	624130.171		
TOTAL	80389346.097	123	653571.919		
State Contribution					
MAIN EFFECTS	6272.500	3	2090.833	17.044	0.000*
QUADRANT	6272.500	3	2090.833	17.044	0.000*
EXPLAINED	6272.500	3	2090.833	17.044	0.000*
RESIDUAL	14720.531	120	122.671		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	25728970.779	3	8576323.593	2.769	.045*
QUADRANT	25728970.779	3	8576323.593	2.769	.045*
EXPLAINED	25728970.779	3	8576323.593	2.769	.045*
RESIDUAL	371676901.318	120	3097307.511		
TOTAL	397405872.097	123	3230942.050		

* significant at .05

TABLE 4.10.4

ANALYSIS OF VARIANCE
FOR QUADRANT

GEOGRAPHIC FACTORS	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
Town Size					
MAIN EFFECTS	1393200.434	3	464400.145	.325	.807
QUADRANT	1393200.434	3	464400.145	.325	.807
EXPLAINED	1393200.434	3	464400.145	.325	.807
RESIDUAL	171218704.751	120	1426822.540		
TOTAL	172611905.185	123	1403348.823		
Transportation Time					
MAIN EFFECTS	600.960	3	200.032	1.268	.289
QUADRANT	600.960	3	200.032	1.268	.289
EXPLAINED	600.960	3	200.032	1.268	.289
RESIDUAL	18935.511	120	157.796		
TOTAL	19535.607	123	158.826		

* significant at .05

TABLE 4.11

SIGNIFICANT
ANALYSIS OF VARIANCE
FOR AREA EDUCATION AGENCY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
School Size					
MAIN EFFECTS	283803.754	14	20271.697	2.761	.002*
AREA EDUCATION AGENCY	283803.754	14	20271.697	2.761	.002*
EXPLAINED	283803.754	14	20271.697	2.761	.002*
RESIDUAL	800334.794	109	7342.521		
TOTAL	1084138.548	123	8814.135		
State Contribution					
MAIN EFFECTS	11779.180	14	841.370	9.953	0.000*
AREA EDUCATION AGENCY	11779.180	14	841.370	9.953	0.000*
EXPLAINED	11779.180	14	841.370	9.953	0.000*
RESIDUAL	9213.851	109	84.531		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	143040867.353	14	10217204.811	4.378	0.000*
AREA EDUCATION AGENCY	143040867.353	14	10217204.811	4.378	0.000*
EXPLAINED	143040867.353	14	10217204.811	4.378	0.000*
RESIDUAL	254365004.744	109	2333623.897		
TOTAL	397405872.097	123	3230942.050		

* Significant at .05

TABLE 4.11.1

ANALYSIS OF VARIANCE
FOR AREA EDUCATION AGENCY

	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
SCHOOL FACTORS					
Pupil Teacher Ratio					
MAIN EFFECTS	156.602	14	11.186	1.008	.451
AREA EDUCATION AGENCY	156.602	14	11.186	1.008	.451
EXPLAINED	156.602	14	11.186	1.008	.451
RESIDUAL	1209.952	109	11.100		
TOTAL	1366.554	123	11.110		
Certified Staff Experience					
MAIN EFFECTS	248.663	14	17.762	1.417	.157
AREA EDUCATION AGENCY	248.663	14	17.762	1.417	.157
EXPLAINED	248.663	14	17.762	1.417	.157
RESIDUAL	1365.857	109	12.531		
TOTAL	1614.521	123	13.126		
School Size					
MAIN EFFECTS	283803.754	14	20271.697	2.761	.002*
AREA EDUCATION AGENCY	283803.754	14	20271.697	2.761	.002*
EXPLAINED	283803.754	14	20271.697	2.761	.002*
RESIDUAL	800334.794	109	7342.521		
TOTAL	1084138.548	123	8814.135		

* significant at .05

TABLE 4.11.2

ANALYSIS OF VARIANCE
FOR AREA EDUCATION AGENCY

STUDENT FACTORS	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
Average Daily Attendance					
MAIN EFFECTS	11.018	14	.787	1.518	.116
AREA EDUCATION AGENCY	11.018	14	.787	1.518	.116
EXPLAINED	11.018	14	.787	1.518	.116
RESIDUAL	56.514	109	.518		
TOTAL	67.532	123	.549		
Pupil Mobility					
MAIN EFFECTS	.009	14	.001	.879	.583
AREA EDUCATION AGENCY	.009	14	.001	.879	.583
EXPLAINED	.009	14	.001	.879	.583
RESIDUAL	.078	109	.001		
TOTAL	.087	123	.001		
Achievement					
MAIN EFFECTS	7.547	14	.539	1.186	.296
AREA EDUCATION AGENCY	7.547	14	.539	1.186	.296
EXPLAINED	7.547	14	.539	1.186	.296
RESIDUAL	49.555	109	.455		
TOTAL	57.103	123	.464		

* significant at .05

TABLE 4.11.3

ANALYSIS OF VARIANCE
FOR AREA EDUCATION AGENCY

FISCAL FACTORS	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
Per Pupil Expenditures					
MAIN EFFECTS	12767034.834	14	911931.060	1.470	.135
AREA EDUCATION AGENCY	12767034.834	14	911931.060	1.470	.135
EXPLAINED	12767034.834	14	911931.060	1.470	.135
RESIDUAL	67622311.263	109	620388.177		
TOTAL	80389346.097	123	653571.919		
State Contribution					
MAIN EFFECTS	11779.180	14	841.370	9.953	0.000*
AREA EDUCATION AGENCY	11779.180	14	841.370	9.953	0.000*
EXPLAINED	11779.180	14	841.370	9.953	0.000*
RESIDUAL	9213.851	109	84.531		
TOTAL	20993.031	123	170.675		
Socio Economic Status					
MAIN EFFECTS	143040867.353	14	10217204.811	4.378	0.000*
AREA EDUCATION AGENCY	143040867.353	14	10217204.811	4.378	0.000*
EXPLAINED	143040867.353	14	10217204.811	4.378	0.000*
RESIDUAL	254365004.744	109	2333623.897		
TOTAL	397405872.097	123	3230942.050		

* significant at .05

TABLE 4.11.4

ANALYSIS OF VARIANCE
FOR AREA EDUCATION AGENCY

GEOGRAPHIC FACTORS	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
Town Size					
MAIN EFFECTS	20148785.361	14	1439198.954	1.029	.431
AREA EDUCATION AGENCY	20148785.361	14	1439198.954	1.029	.431
EXPLAINED	20148785.361	14	1439198.954	1.029	.431
RESIDUAL	152463119.824	109	1398744.219		
TOTAL	172611905.185	123	1403348.823		
Transportation Time					
MAIN EFFECTS	3005.076	14	214.648	1.415	.158
AREA EDUCATION AGENCY	3005.076	14	214.648	1.415	.158
EXPLAINED	3005.076	14	214.648	1.415	.158
RESIDUAL	16530.531	109	151.656		
TOTAL	19535.607	123	158.826		

* significant at .05

Table 4.12

TUKEY FOR INTERACTION OF AREA EDUCATION AGENCIES AND STATE CONTRIBUTION

Mean	AEA	AEA 2	AEA 3	AEA 5	AEA 6
35.94	4	*			
38.57	13	*	*		
41.29	11	*	*		
42.68	12	*	*		
43.89	14	*	*	*	
46.33	1	*	*		
48.58	15	*	*		
48.97	9	*	*	*	
49.18	10	*	*	*	
49.55	7	*	*	*	*
55.66	16	*	*	*	

TABLE 4.13

MULTIPLE REGRESSION ANALYSIS

DEPENDENT VARIABLE ACH (STUDENT ACHIEVEMENT)

MULTIPLE R	.33844
R SQUARE	.11454
ADJUSTED R SQUARE	.03618
STANDARD ERROR	.66892

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
STATE CONTRIBUTION	-.015678	.005785	-.300601	-2.7100	.0078
CERT. STAFF EXPERIENCE	.002733	.017222	.014533	.1590	.8742
TOWN SIZE	-5.77293E-05	5.8708E-05	-.100370	-.9830	.3275
PUPIL MOBILITY	-1.355996	2.331870	-.052806	-.5820	.5621
TRANSPORTATION TIME	-.005200	.005355	-.096187	-.9710	.3336
AVERAGE DAILY ATTEND.	.052900	.086961	.057528	.6080	.5442
PUPIL TEACHER RATIO	.033352	.021617	.163159	1.5430	.1256
SOCIO-ECONOMIC STATUS	-8.29153E-05	4.0119E-05	-.218738	-2.0670	.0410
PER PUPIL EXPENDITURE	-5.04178E-05	9.2865E-05	-.005982	-.0540	.9568
SCHOOL SIZE	.001720	9.6978E-05	.236940	1.7330	.0789
(CONSTANT)	4.201912	8.589921		.4890	.6257

APPENDIX C

CHAPTER 4
ACCREDITED SCHOOLS AND SCHOOL DISTRICTS

PREAMBLE

The following standards are the minimum requirements that must be met by an Iowa public school district to be accredited. A public school district that does not maintain accreditation shall be merged by the state board of education with one or more contiguous school districts as required by Iowa Code subsection 256.11(12). A nonpublic school must meet the standards if it wishes to be designated as accredited for operation in Iowa. The standards are intended to fulfill the state's responsibility for making available an appropriate educational opportunity for each child of school age in Iowa. They are designed to ensure that each child has access to educational programs essential to the needs and abilities of the child regardless of race, sex, handicapping condition, language, socioeconomic background, or geographic location. No public school district, or a nonpublic school desiring to be accredited, is required to meet the provisions of this chapter prior to July 1, 1989.

Division I
General Standards

670—4.1(256) General standards.

4.1(1) Educational units governed by standards. These standards govern the accreditation of all prekindergarten, if offered, or kindergarten through grade twelve school districts operated by public school corporations and the accreditation, if requested, of prekindergarten or kindergarten through grade twelve schools operated under nonpublic auspices. "School" means prekindergarten, if offered, and any organizational pattern of kindergarten through grade twelve of an elementary-secondary education program. Equal opportunity in programs shall be provided to all students regardless of race, national origin, sex, or disability. Each board shall take affirmative steps to integrate students in attendance centers and courses. In order to monitor progress, district, attendance centers, and course enrollment data shall be collected on the basis

of race, national origin, sex and disability, and reviewed and updated annually.

4.1(2) School board. Each school or school district shall be governed by an identifiable authority which shall exercise the functions necessary for the effective operation of the school and referred to in these rules as the "board."

4.1(3) Application for accreditation. The board of any school or school district that is not accredited on the effective date of these standards and which seeks accreditation shall file an application with the director, department of education, on or before the first day of January of the school year preceding the school year for which accreditation is sought.

4.1(4) Accredited schools and school districts. Each school or school district receiving accreditation under the provisions of these standards shall remain accredited except when by action of the state board of education it is removed from the list of accredited schools maintained by the department of education in accordance with Iowa Code subsections 256.11(11) and 256.11(12).

4.1(5) When nonaccredited. A school or school district shall be nonaccredited on the day after the date it is removed from the list of accredited schools by action of the state board of education.

4.1(6) Exemption request. A board may request from the director of the department of education exemption from one or more of the requirements of the educational program specified in Iowa Code subsection 256.11(6). The request shall meet all requirements of Iowa Code subsection 256.11(8) and shall be granted only if the director determines that it is part of a planned, innovative curriculum project meeting the educational needs and interests of pupils and is broadly consistent with the intent of the educational program as defined in Iowa Code subsection 256.11(6). The director shall require an annual renewal of the exemption; any renewal of the exemption shall be at the discretion of the director.

4.1(7) Alternative provisions for accreditation. School districts may meet accreditation requirements through the provisions of Iowa Code sections 256.13, nonresident pupils; 273.7A, services to school districts; 279.20, superintendent—term; 280.15, joint employment and sharing; and 282.7, attending in another corporation—payment. Nonpublic schools may meet accreditation requirements through the provisions of Iowa Code section 256.12.

Division II
Definitions

670—4.2(256) Definitions. For purposes of these accreditation standards, the following definitions shall be used.

4.2(1) Minimum school calendar and day of instruction. Each board shall adopt a school calendar that identifies specific days for student instruction, staff development and in-service time, and time for teacher conferences. The length of the school calendar does not dictate the length of contract or employment days for individual instructional and noninstructional staff. The school calendar may be operated any time during the school year of July 1 to June 30 as defined by Iowa Code section 279.10. A minimum of 180 days of the school calendar, for school districts beginning no sooner than September 1, shall be used for student instruction. These days shall meet the definitions of "day of school" in subrule 4.2(2), "minimum school day" in subrule 4.2(3), and "day of attendance" in subrule 4.2(4). Of the remaining days in the school calendar, a minimum of 20 days, excluding vacation and holidays, shall be used as determined by the board for other educational purposes involving instructional and noninstructional staff.

4.2(2) Day of school. A day of school is a day during which the school or school district is in session and pupils are under the guidance and instruction of the instructional professional staff. School shall be considered in session during activities such as field trips if pupils are engaged in school programs or activities under the guidance and direction of the instructional professional staff. All grade levels of the school or school district must be operated and available for attendance by all pupils. An exception is if either the elementary or secondary grades are closed for a portion of the day for activities such as staff in-service programs or parent-teacher conferences provided that this time is made up at some other point during the school calendar so as to meet the minimum of 180 days of instruction for all grade levels one through twelve. If a classroom or attendance center is closed for emergency health or safety reasons but the remainder of the school or school district is in operation, the day may be counted as a day of school.

4.2(3) Minimum school day. A school day shall consist of a minimum of five and one-half hours of instructional time for all grades one through twelve. The minimum hours shall be exclusive of the lunch period. Passing time between classes may be counted as part of the five and one-half hour requirement. The school or school district may record a day of school with less than the minimum instructional hours if emergency health or safety factors require the late arrival or early dismissal of pupils on a specific day.

4.2(4) Day of attendance. A day of attendance shall be a day during which a pupil was present and under the guidance and instruction of the instructional professional staff. A pupil shall not be counted in attendance during school calendar days designated by the board for certificated staff in-service programs or for parent-teacher conferences unless these are conducted outside the time required for a "minimum school day." (Note exception in subrule 4.2(2).)

4.2(5) Enrolled pupil. A pupil shall be considered enrolled after registering with the school or school district and taking part in the educational program.

4.2(6) Kindergarten program. A kindergarten program complying with the educational program description in subrule 4.5(2) shall be operated by a school district. A nonpublic school is not required to offer kindergarten in order to be accredited. Prior to July 1, 1992, the number of instructional days within the school calendar and the length of the school day for kindergarten shall be defined by the board. Starting July 1, 1992, kindergarten programs of accredited school districts, and nonpublic schools if offered, shall operate a minimum of 180 days and shall meet a minimum school day time requirement of four and one-half hours.

Division III
Administration

670—4.3(256) Administration. The following standards shall apply to the administration of accredited schools and school districts.

4.3(1) Board records. Each board shall adopt by written policy a system for maintaining accurate records.

The system shall provide for recording and maintaining the minutes of all board meetings, coding all receipts and expenditures, and recording and filing all reports required by the Iowa Code or requested by the director of the department of education. Financial records of school districts shall be maintained in a manner as to be easily audited according to accepted accounting procedures.

4.3(2) Policy manual. The board shall develop and maintain a policy manual which provides a codification of its policy actions with the adoption date, the review date, and any revision date of each. Policies shall be reviewed at least every three years to ensure relevance to current practices and compliance with the Iowa Code, administrative rules and decisions, and court decisions.

4.3(3) Needs assessment, statement of philosophy, and long-range plans. The board, in compliance with Iowa Code section 280.12 and as a standard for accreditation, shall adopt and implement a process for conducting an ongoing needs assessment for the school or school district. Information obtained from this process shall be used by the board, in conjunction with other data, to establish and update both long- and short-range plans which include specific goals for meeting the identified needs. The purpose of the assessment process is twofold: first, to assist the board in developing and evaluating a statement of philosophy for the school or school district; and second, to determine the areas of student performance, knowledge, and attitudes which are judged to be most crucial in meeting school or district goals. This process, for school districts, shall comply with Iowa Code section 280.18 requiring the adoption of goals to improve student achievement and performance. As part of its assessment the board shall develop a process for communicating with business, industry, labor, and higher education regarding their expectations for adequate student preparation.

The statement of philosophy shall describe the board's beliefs about topics which shall include, but need not be limited to, the nature of learning, the purpose of the school or school district, the scope of educational experiences that the school or school district should provide, the nature of its learners, and a description of a desirable learning atmosphere.

While there are various procedures or models that may be used in conducting a needs assessment, the following basic steps shall be included. School goals shall be identified and stated in terms of what learners should be able to perform as a result of their schooling. The board shall determine which of these goals represent learning that would help the majority of the students in each course assume responsibilities as citizens, parents, and wage earners. Such identified goals shall be called basic skills and should be given the highest priority. School staff, students, parents, and community members shall recommend courses to be offered above requirements established by subrules 4.5(1) to 4.5(5) and within the optional areas described in subrule 4.5(5), paragraphs "g," "h," and "i." Recommendations of this committee shall primarily reflect both the identified needs and resources of the school or school district. Assessment procedures, including those persons responsible for assessment, shall be identified for goals in the basic skills areas, and performance criteria shall be established and reviewed.

In identifying school goals, specific consideration shall be given to the five-year plan for the achievement of educational goals in Iowa developed by the state board of education as required by Iowa Code subsection 256.7(4).

As part of its needs assessment policy the board shall include provisions for keeping its various publics regularly informed of its policies, procedures, programs, and planning for the school or school district. This policy shall ensure involvement and consultation with students, parents, teachers, administrators, and representatives from the community in developing the various processes required by Iowa Code section 280.12.

4.3(4) Personnel evaluation. Each board shall adopt a performance evaluation process for school personnel. Personnel evaluation processes of school districts shall conform to Iowa Code sections 260.33 and 279.14.

4.3(5) Instructional time audit. The board shall by adopted policy require its administration to provide an audit of the availability of instructional time for students. Considerations in an audit shall include, but need not be limited to, the patterns of employment and assignment of instructional professional staff; the relationship of the school organization and instructional methods to the availability of instructional time; identification of the responsibility for organizing and managing the instructional program, with specific attention to the effect of curriculum sequencing and integration on instructional time availability; and the effect of cocurricular and extracurricular activity programs on availability of instructional time.

The administration shall provide an annual report to the board on the availability of instructional time for students.

4.3(6) Student records. Each board shall require its administrative staff to establish and maintain a system of pupil records. This system shall include for each pupil a permanent office record and a cumulative record.

The permanent office record shall serve as a historical record of official information concerning the pupil's education. At a minimum it should reflect evidence of attendance and educational progress, provide an official transcript, have all base data for use in planning to meet educational needs, and provide all data for official school reports. This record is to be permanently maintained and stored in a fire-resistant safe or vault.

The cumulative record shall provide a continuous and current record of significant information on progress and growth. It should reflect information such as courses taken, scholastic progress, school attendance, physical and health record, experiences, interests, aptitudes, attitudes, abilities, honors, extracurricular activities, part-time employment, and future plans. It is the "working record" used by the instructional professional staff in understanding the pupil. At the request of a receiving school or school district, a copy of the cumulative record shall be sent to officials of that school when a pupil transfers.

The board shall adopt a policy concerning the accessibility and confidentiality of pupil records that complies with the provisions of the federal Family Educational Rights and Privacy Act of 1974, as amended, and Iowa Code chapter 22.

4.3(7) Standards for graduation. Each board providing a program through grade twelve shall adopt a policy establishing the requirements students must meet for high school graduation. This policy shall make provision for early graduation and shall be consistent with these standards and the Iowa Code.

4.3(8) Student responsibility and discipline. The board shall adopt student responsibility and discipline policies. In developing or revising such policies, the board shall involve parents, students, instructional and noninstructional professional staff, and community members. Student responsibility and discipline policies shall relate to the educational purposes of the school or school district. The policies shall include, but need not be limited to, attendance; use of tobacco and the use or possession of alcoholic beverages or any controlled substance; violent, destructive, and seriously disruptive behavior; suspension, expulsion, emergency removal, corporal punishment, and physical restraint; out-of-school behavior; participation in extracurricular activities; academic progress; and citizenship.

In developing and applying student responsibility and discipline policies, the board shall ensure due process rights for students and parents. In some instances this may require developing separate policies for students who have been identified as requiring special education programs and services.

The board shall also consider the potential of a disparate impact on students by virtue of race, sex, disability, or national origin.

The board shall publicize its support of these policies; its support of the staff in enforcing them; and the staff's accountability for implementing them.

4.3(9) Health services. The board shall adopt a policy for the implementation of a school health services program. The program shall be designed to help each student protect, improve, and maintain physical, emotional, and social well-being.

Areas to be considered in the development of a policy could include, but not necessarily be limited to: environmental health and safety; emergency health procedures and responsibilities; health promotion; communicable disease prevention and control; staffing for the school health program; administering of prescription medication; acute or chronic health problems; and health assessment and screening; and record keeping and program evaluation.

4.3(10) Audit of school funds. This standard applies only to public school districts. The results of the annual audit of all public school district funds conducted by the state auditor or a private auditing firm shall be made part of the official records of the board.

4.3(11) School system organizational structure. The board shall officially adopt an organizational structure for the school(s) under its jurisdiction. This action shall be recorded in its minutes.

4.3(12) Report on nonpublic school instruction. Between September 1 and October 1 of each year the secretary of each public school district board shall request from each nonpublic school located within its boundaries a report of private school instruction as required by Iowa Code section 299.3. Each nonpublic school shall submit the required report in duplicate. The secretary of the public school board shall send one copy to the board secretary of the area education agency within which the public school district is located.

Each nonpublic school shall send to each public school district from which it receives pupils a list of the pupils of compulsory school age enrolled in the nonpublic school who are residents of that district. This list shall include the name, grade, date of birth, name of parent or guardian, and location of the pupil's residence.

Division IV
School Personnel

670—4.4(256) School personnel. Certificate and endorsement standards required in this rule relate to certificates and endorsements issued by the state board of education. The following standards shall apply to personnel employed in accredited schools.

4.4(1) Instructional professional staff. Each person who holds a certificate endorsed for the service for which that person is employed shall be eligible for classification as a member of the instructional professional staff.

4.4(2) Noninstructional professional staff. Each person who holds a statement of professional recognition in one of the noninstructional areas listed in Iowa Code subsection 256.11(9)"b," or in one of the other noninstructional professional areas designated by the state board of education, shall be eligible for classification as a member of the noninstructional professional staff.

4.4(3) Basis for approval of professional staff. Each member of the professional staff shall be classified as either instructional or noninstructional. An instructional professional staff member shall be regarded as approved when holding either an appropriate certificate with endorsement or endorsements, or a certificate with an approval statement, indicating the specific teaching assignments that may be given. A noninstructional staff member shall be regarded as approved when holding a statement of professional recognition for the specific type of noninstructional professional school service for which employed.

4.4(4) Required administrative personnel. Each board that operates both an elementary school and a secondary school shall employ as its executive officer and chief administrator a person who holds a certificate endorsed for service as a superintendent. The board of a school district may meet this requirement by contracting with its area education agency for "superintendency services" as provided by Iowa Code section 273.7A. The individual employed or contracted for as superintendent cannot also serve as a principal in that school or school district. Boards of school districts may jointly employ a superintendent, provided such arrangements comply with the provisions of Iowa Code subsection 279.23(4).

4.4(5) Staffing policies—elementary schools. The board operating an elementary school shall develop and adopt staffing policies designed to attract, retain, and effectively utilize competent personnel. Each board operating an elementary school shall employ at least one elementary principal. This position may be combined with that of secondary principal or with a teaching assignment at the elementary or secondary level, provided the individual holds the proper certificates and endorsements. This position cannot be combined with that of superintendent.

When grades seven and eight are part of an organized and administered junior high school, the staffing policies adopted by the board for secondary schools shall apply. When grades seven and eight are part of an organized and administered middle school, the staffing policies adopted by the board for elementary schools shall apply.

4.4(6) Staffing policies—secondary schools. The board operating a secondary school shall develop and adopt staffing policies designed to attract, retain, and effectively utilize competent personnel. Each board operating a secondary school shall employ at least one secondary principal. This position may be combined with

that of elementary principal or with a teaching assignment at the elementary or secondary level, provided the individual holds the proper certificates and endorsements. This position cannot be combined with that of superintendent.

4.4(7) Principal. A principal shall be defined as a member of the instructional professional staff who holds a certificate endorsed for the type of position in which employed. Under the supervision of the superintendent and pursuant to rules and policies of the board, the principal serves as site manager and instructional leader of the attendance center or centers to which assigned; supervises the process and content involved in the delivery of educational and instructional services; coordinates the development of the budget for the attendance center or centers for which responsible; supervises and evaluates all assigned certificated and noncertificated staff; submits recommendations to the administration regarding the appointment, assignment, promotion, transfer, and dismissal of all personnel assigned to the attendance center or centers for which responsible; assists in developing and implementing board policy; and supervises a student activities program and assists in its development.

4.4(8) Teacher. A teacher shall be defined as a member of the instructional professional staff who holds a certificate endorsed for the type of position in which employed. A teacher diagnoses, prescribes, evaluates, and directs student learnings in terms of the school's objectives, either singly or in concert with other professional staff members; shares responsibility with the total professional staff for developing educational procedures and student activities to be used in achieving the school's objectives; supervises educational aides who assist in serving students for whom the teacher is responsible; and evaluates or assesses student progress during and following instruction in terms of the objectives sought, and uses this information to develop further educational procedures.

4.4(9) Educational aide. An educational aide shall be defined as an employee or volunteer who, in the presence or absence of professional instructional staff members but under the direction, supervision, and control of the instructional professional staff, supervises students on a monitorial or service basis; and works with students in a supportive role under conditions determined by the instructional professional staff responsible for the students, but not as a substitute for or a replacement of functions and duties of a teacher as established in subrule 4.4(8).

During the initial year of employment, an educational aide shall complete an in-service training program approved by the board as provided in subrule 4.7(1).

4.4(10) Record of certificate or statement of professional recognition. The board shall require each administrator, teacher, support service staff member, and noninstructional staff member on its staff to supply evidence that each holds a certificate or statement of professional recognition which is in force and valid for the type of position in which employed.

4.4(11) Record required regarding teacher and administrative assignments. The board shall require its superintendent or other designated administrator to maintain a file for all regularly employed members of the instructional professional staff, including substitute teachers. The file shall consist of complete official transcripts of the preparation of these staff members and their legal certificates or copies thereof showing that they are eligible for the position in which employed. The official shall also maintain on file a legal certificate or statement of professional recognition as defined in subrule 4.4(2) for each member of the noninstructional professional staff. These records shall be on file at the beginning of and throughout each school year and shall be updated annually to reflect all professional growth.

On December 1 of each year, the official shall verify to the department of education the certification and endorsement status of each member of the instructional and administrative staff. This report shall be on forms provided by the department of education and shall identify all persons holding conditional authorizations and their specific assignment(s) with the conditional authorization(s).

4.4(12) Nurses. Each board that employs a nurse shall require a current license to be filed with the superintendent or other designated administrator as specified in subrule 4.4(10).

4.4(13) Prekindergarten staff. Prekindergarten teachers shall hold a certificate valid for the prekindergarten level. The board shall employ personnel as necessary to provide effective supervision and instruction in the prekindergarten program.

4.4(14) Physical examination. Except as otherwise provided in 670—22.15(285), the local board shall require each employee to file with it certification of fitness to perform the tasks assigned which shall be in the form of a written report of a physical examination, including a check for tuberculosis, by a licensed physician and surgeon, osteopathic physician and surgeon, osteopath, or qualified doctor of chiropractic. A report shall be filed at the beginning of service and at three-year intervals.

Each doctor of chiropractic licensed as of July 1, 1974, shall affirm on each certificate of physical examination that the affidavit required by Iowa Code section 151.8 is on file with the Iowa board of chiropractic examiners.

4.4(15) Support staff. The board shall develop and implement procedures for the use of educational support staff to augment classroom instruction and to meet individual student needs. These staff members may be employed by the board or by the area education agency.

Division V
Education Program

670—4.5(256) Education program. The following education program standards shall be met by schools and school districts for accreditation with the start of the 1989-1990 school year.

4.5(1) Prekindergarten program. The prekindergarten program, if offered, shall be designed to help children work and play with others, express themselves, learn to use and manage their bodies, and extend their interests in and understanding of the world about them. The program shall relate the role of the family to the child's developing sense of self and perception of others. Activities shall be designed to encourage cooperative efforts between home and school and shall utilize community resources. A prekindergarten teacher shall be certificated to teach in prekindergarten.

4.5(2) Kindergarten program. The kindergarten program shall include experiences designed to develop healthy emotional and social habits; language arts and communication skills; the capacity to complete individual tasks; and the ability to protect and increase physical well-being. A kindergarten teacher shall be certificated

to teach in kindergarten. An accredited nonpublic school must meet the requirements of this subrule only if it offers a kindergarten program.

4.5(3) Elementary program, grades 1-6. The following shall be taught in grades one through six: English-language arts, social studies, mathematics, science, health, physical education, traffic safety, music, and visual art.

In implementing the elementary program standards, the following general curriculum definitions shall be used.

a. English-language arts. English-language arts instruction shall include the following communication processes: speaking; listening; reading; writing; viewing; and visual expression and nonverbal communication. Instruction shall incorporate language learning and creative, logical, and critical thinking. The following shall be taught: oral and written composition; communication processes and skills, including handwriting and spelling; literature; creative dramatics; and reading.

b. Social studies. Social studies instruction shall include citizenship education, history, and social sciences. Democratic beliefs and values, problem-solving skills, and social and political participation skills shall be incorporated. Instruction shall encompass geography, history of the United States and Iowa, and cultures of other peoples and nations. American citizenship, including the study of national, state, and local government; and the awareness of the physical, social, emotional and mental self shall be infused in the instructional program.

c. Mathematics. Mathematics instruction shall include problem solving; geometry; measurement; appropriate computational skills, including mental arithmetic; reasonableness of results; reading, interpreting, and constructing tables, charts, and graphs; estimation; and the use of calculators as standard tools in problem solving.

d. Science. Science instruction shall include life, earth, and physical science and shall incorporate hands-on process skills; scientific knowledge; application of the skills and knowledge to students and society; conservation of natural resources; and environmental awareness.

e. Health. Health instruction shall include personal health; food and nutrition; environmental health; safety and survival skills; consumer health; family life; substance use and nonuse, encompassing the effects of alcohol, tobacco, drugs, and poisons on the human body; emotional and social health; health resources; and prevention and control of disease, including characteristics of communicable diseases.

f. Physical education. Physical education instruction shall include movement experiences and body mechanics; fitness activities; rhythmic activities; stunts and tumbling; simple games and relays; sports skills and activities; and water safety.

g. Traffic safety. Traffic safety instruction shall include pedestrian safety; bicycle safety; auto passenger safety; school bus passenger safety; seat belt use; substance education; and the application of legal responsibility and risk management to these concepts.

h. Music. Music instruction shall include skills, knowledge, and attitudes and shall include singing and playing music; listening to and using music; reading and writing music; recognizing the value of the world's musical heritage; respecting individual musical aspirations and values; and preparing for consuming, performing, or composing.

i. Visual art. Visual art instruction shall include perceiving, comprehending, and evaluating the visual world; viewing and understanding the visual arts; developing and communicating imaginative and inventive ideas; and making art.

4.5(4) Junior high program, grades 7 and 8. The following shall be taught in grades seven and eight: English-language arts, social studies, mathematics, science, health, physical education, music, and visual art.

In implementing the junior high program standards, the following general curriculum definitions shall be used.

a. English-language arts. Same definition as in subrule 4.5(3)"a" with the exclusion of handwriting.

b. Social studies. Social studies instruction shall include citizenship education, history and social sciences. Democratic beliefs and values, problem-solving skills, and social and political participation skills shall be incorporated. Instruction shall encompass history, economics, geography, government including American citizenship, behavioral sciences, and the cultures of other peoples and nations. Strategies for continued development of positive self-perceptions shall be infused.

c. Mathematics. Same definition as in subrule 4.5(3)"c" with the addition of mental arithmetic through the real number system; ratio proportion, and percent.

d. Science. Same definition as in subrule 4.5(3)"d."

e. Health. Health instruction shall include personal health; food and nutrition; environmental health; safety and survival skills; consumer health; family life; substance use and nonuse, encompassing the effects of alcohol, tobacco, drugs, and poisons on the human body; emotional and social health; health resources; and prevention and control of disease and the characteristics of communicable diseases, including sexually transmitted diseases.

f. Physical education. Physical education shall include the physical fitness activities that increase cardiovascular endurance, muscular strength, and flexibility; sports and games; tumbling and gymnastics; rhythms and dance; water safety; leisure and lifetime activities.

g. Music. Same definition as in subrule 4.5(3)"h" with the addition of using music as an avocation or vocation.

h. Visual art. Same definition as in subrule 4.5(3)"i" with the addition of using visual arts as an avocation or vocation.

4.5(5) High school program, grades 9-12. In grades nine through twelve a unit is a course or equivalent related components or partial units taught throughout the academic year as defined in subrule 4.5(18). The following shall be offered and taught as the minimum program: English-language arts, six units; social studies, five units; mathematics, six units as specified in subrule 4.5(5)"c"; science, five units; health, one unit; physical education, one unit; fine arts, three units; foreign language, four units; and vocational education, ten units as specified in subrule 4.5(5)"i."

In implementing the high school program standards, the following curriculum standards shall be used.

a. English-language arts (six units). English-language arts instruction shall include the following communication processes: speaking; listening; reading; writing; viewing; and visual expression and nonverbal

communication. Instruction shall incorporate language learning and creative, logical, and critical thinking. The program shall encompass communication processes and skills; written composition; speech; debate; American, English, and world literature; creative dramatics; and journalism.

b. Social studies (five units). Social studies instruction shall include citizenship education, history, and the social sciences. Instruction shall encompass the history of the United States and the history and cultures of other peoples and nations including the analysis of persons, events, issues, and historical evidence reflecting time, change, and cause and effect; an overview of American government through the study of the United States Constitution, the federal system of government, and the structure and relationship between the national, state, county, and local governments; and voter education. Economics shall include comparative and consumer studies in relation to the market and command economic systems. Geography shall include the earth's physical and cultural features, their spatial arrangement and interrelationships, and the forces that affect them. Sociology, psychology, and anthropology shall include the scientific study of the individual and group behavior(s) reflecting the impact of these behaviors on persons, groups, society, and the major institutions in a society. Democratic beliefs and values, problem-solving skills, and social and political skills shall be incorporated.

c. Mathematics (six units). Mathematics instruction shall include:

(1) Two units of general mathematics, encompassing components in problem solving; geometry; measurement; appropriate computational skills, incorporating mental arithmetic through the real number system; ratio, proportion, and percent; reasonableness of results; reading, interpreting, and constructing tables, charts, and graphs; estimation; applications of mathematics; quantitative literacy; and the use of calculators and computers as standard tools in problem solving.

(2) Four units of a sequential mathematics program which would serve as prerequisites to postsecondary educational programs. The program shall include algebraic, geometric, trigonometric, and finite mathematical concepts; problem solving; applications of mathematics; reasonableness of results; estimation and mental calculations; and the use of calculators and computers as standard tools in problem solving.

d. Science (five units). Science instruction shall include biological, earth, and physical science, including physics and chemistry. Full units of chemistry and physics shall be taught but may be offered in alternate years. All science instruction shall incorporate hands-on process skills; scientific knowledge; the application of the skills and knowledge to students and society; conservation of natural resources; and environmental awareness.

e. Health (one unit). Health instruction shall include personal health; food and nutrition; environmental health; safety and survival skills; consumer health; family life; substance abuse and nonuse; emotional and social health; health resources; and prevention and control of disease, including sexually transmitted diseases.

f. Physical education (one unit). Physical education shall include the physical fitness activities that increase cardiovascular endurance, muscular strength and flexibility; sports and games; tumbling and gymnastics; rhythms and dance; water safety; leisure and lifetime activities.

All physically able students shall be required to participate in the program for a minimum of one-eighth unit during each semester they are enrolled except as otherwise provided in this paragraph. A twelfth-grade student may be excused from this requirement by the principal of the school in which the student is enrolled under one of the following circumstances:

(1) The student is enrolled in a cooperative, work-study, or other educational program authorized by the school which requires the student's absence from the school premises during the school day.

(2) The student is enrolled in academic courses not otherwise available.

The student's parent or guardian must request the excuse in writing. The principal shall inform the superintendent that the student has been excused.

g. Fine arts (three units). Fine arts instruction shall include at least two of the following:

(1) Dance. Dance instruction shall encompass developing basic movement skills; elementary movement concepts; study of dance forms and dance heritage; participating in dance; and evaluating dance as a creative art; and using dance as an avocation or vocation.

(2) Music. Music instruction shall include skills, knowledge, and attitudes and the singing and playing of music; listening to and using music; reading and writing music; recognizing the value of the world's musical heritage; respecting individual musical aspirations and values; preparing for consuming, performing, or composing; and using music as an avocation or vocation.

(3) Theatre. Theatre instruction shall encompass developing the internal and external resources used in the theatre process; creating theatre through artistic collaboration; relating theatre to its social context; forming aesthetic judgments; and using theatre as an avocation or vocation.

(4) Visual art. Visual art instruction shall include developing concepts and values about natural and created environments; critiquing works of art; evaluating relationships between art and societies; analyzing, abstracting, and synthesizing visual forms to express ideas; making art; and using visual art as an avocation or vocation.

h. Foreign language (four units). The foreign language program shall be a four-unit sequence of uninterrupted study in at least one language. Foreign language instruction shall include listening comprehension appropriate to the level of instruction; rateable oral proficiency; reading comprehension appropriate to the level of instruction; writing proficiency appropriate to the level of instruction and cultural awareness.

All high schools shall offer and teach the first two units of the sequence. The third and fourth units must be offered. However, the department of education may, on an annual basis, waive the third and fourth unit requirements upon the request of the board. The board must document that a certificated teacher was employed and assigned a schedule that would have allowed students to enroll, that the class was properly scheduled, that students were aware of the course offerings, and that no students enrolled.

i. Vocational education (ten units). Vocational education shall prepare students for employment upon graduation and for post-high school education. This

standard applies only to public school districts. Classroom instruction shall be coordinated with field, laboratory, or work experience. A minimum of one unit shall be offered and taught in four of the following six areas: industrial education; business and office; home economics; agriculture science and technology; health occupations; and marketing education. The remaining six required units may be offered and taught in any of these six areas.

(1) Industrial education. Industrial education includes two types of programs: industrial technology education and trade and industrial education. Minimum content shall include at least one unit of industrial technology education and may include additional units of trade and industrial education.

Instruction in industrial technology shall include exploration of technological systems, exploration of careers in technology, and the continued development of technological literacy. It shall provide for development of fundamental knowledge and skills needed to succeed in further educational pursuits. It shall consist of instruction in at least three of the following systems: manufacturing, energy and power, graphic communications, construction and transportation.

Instruction in trade and industrial education shall include specialized instruction through trade and industrial/technical education at grades eleven and twelve and shall prepare students for entry level occupations or further technical education. This shall involve specialized preparation in occupations explored by the technological systems of industrial technology education.

(2) Business and office. Business and office education shall include instructional programs that prepare individuals for a variety of activities in planning, organizing, directing, and controlling all business office systems and procedures. It also includes instruction in preparing, transcribing, systematizing, and preserving written communications and records; preparing and analyzing financial records; collecting accounts and receiving and disbursing money; gathering, processing and distributing information and mail; operating office machines and electronic data processing equipment; storing, distributing, and accounting for inventories of materials; operating telephone switchboards and delivering messages; and performing other business office duties.

(3) Home economics. Home economics shall include one or both of the following two types of programs:

Consumer and homemaking. Instruction to prepare students for the occupation of homemaking. Minimum content for a unit shall include instruction in one or more of the following: food and nutrition; consumer education; family living; parenthood education; child development and guidance; housing; home management, including resource management; and clothing and textiles.

Home economics occupations. Instruction to prepare students for paid employment in home economics related occupations. Minimum content for one unit shall be instruction in any of the following: food production, management, and service; child care aide or assistant; clothing, apparel/textiles management, production and service; home furnishing and equipment production, management, and service; and institutional and home management support services.

(4) Agriculture science and technology. Agriculture science and technology instruction shall include agribusiness; entrepreneurship; and employment experiences. The instructional program shall also include at least one of the following: animal science; crops and soils; horticulture; diversified agriculture; farm management; agricultural mechanics; and conservation of natural resources. Instruction shall be provided in problem solving and decision making; application of basics; communication; computation; leadership; employability; use of the computer and other equipment; use of community resources; and integration of international policies and culture.

(5) Health occupations. Health occupations instruction shall include the following two types of programs:

Fundamental instruction to assist students to prepare for careers requiring advanced study. Minimum content for one unit shall include career exploration in the following areas: direct patient care; supportive and diagnostic patient care; supportive health occupations; and health-related occupations. The program shall include terminology; anatomy and physiology; ethical and legal aspects of health care; the health team concept; and self-care and wellness. Activities to develop competencies in first aid, cardiopulmonary resuscitation, vital signs, and communication skills shall be incorporated.

Specialized instruction to prepare students for entry-level careers. Minimum content for one unit for students in grades eleven and twelve shall be a balance of classroom instruction, laboratory experiences, and clinical experiences. Instruction shall be in one or more of the following areas: emergency services; health aide; medical-clerical; and allied health.

(6) Marketing education. Marketing instruction shall include the following two types of programs:

Instruction to introduce students to marketing fundamentals, marketing as an economic activity, and to prepare students for careers in marketing. Minimum content should include marketing principles, economic fundamentals of supply and demand, consumer behavior, the marketing concept, the marketing mix, fundamentals of marketing research, and marketing technology.

Specialized instruction to prepare students for entry level careers or advanced study in marketing. Minimum content for one unit for students in grades eleven and twelve shall combine classroom study with coordinated work experience, laboratory, or project work.

Instruction should prepare students for careers in one or more of the following occupational areas: sales, retailing, marketing supervision and management, advertising and promotion, marketing research, distribution, and small business management/entrepreneurship.

4.5(6) Physical education and health courses exemption. A pupil shall not be required to enroll in either physical education or health courses if the pupil's parent or guardian files a written statement with the school principal that the course conflicts with the pupil's religious beliefs.

4.5(7) Career education. The board shall provide a comprehensive career education program. Curricular and cocurricular teaching and learning experiences from the prekindergarten level through grade twelve shall be provided for all students. The career education program shall be infused into the total education program. The program shall include, but need not be limited to, awareness of self in relation to others and the needs of society; exploration of employment opportunities;

experiences in personal decision making; and experiences to help students integrate work values and work skills into their lives. In the implementation of this standard, the board shall comply with Iowa Code section 280.9.

4.5(8) Board of directors' responsibility for ensuring multicultural, nonsexist approaches to educational programs. This standard applies only to public school districts. The board shall establish a policy to ensure the school district is free from discriminatory practices in its educational programs. In developing or revising this policy, parents, students, instructional and noninstructional staff, and community members shall be involved. In addition, each board shall adopt a written plan, to be evaluated and updated at least every five years, for achieving and maintaining a multicultural, nonsexist educational program. A copy of the plan shall be on file in the administrative office of the district. The plan shall include:

a. Multicultural approaches to the educational program. These shall be defined as processes which foster knowledge of, respect and appreciation for, the historical and contemporary contributions of diverse cultural groups to society. Special emphasis shall be placed on Asian Americans, Black Americans, Hispanic Americans, American Indians, and the handicapped. The program shall provide equal opportunity for all participants regardless of race, color, age, national origin, religion, or handicap.

b. Nonsexist approaches to the educational program. These shall be defined as processes which foster knowledge of and respect and appreciation for the historical and contemporary contributions of men and women to society. The program shall reflect the wide variety of roles open to both men and women and shall provide equal opportunity to both sexes.

The plan shall also include specific goals and objectives, with implementation timelines for each component of the educational program; specific provisions for the infusion of multicultural, nonsexist concepts into each area of the curriculum developed under the provisions of subrule 4.5(14); a description of the in-service activities planned for all staff members on multicultural, nonsexist education; and evidence of systematic input by men and women, minority groups, and the handicapped in developing and implementing the plan. In schools where no minority students are enrolled, minority group resource persons shall be utilized at least annually. A description of a periodic, ongoing system to monitor and evaluate the plan shall also be included.

4.5(9) Special education. The board of each school district shall provide special education programs and services for its resident children which comply with rules of the state board of education implementing Iowa Code chapters 256, 273, 280, and 281.

4.5(10) Technology in the curriculum. The board shall adopt a plan for the efficient and effective use of technology in the instructional program. The plan shall provide for the understanding and use of current technology by staff and students and shall include a procedure to review the district's utilization of technology as a teaching and learning tool.

4.5(11) Global education. The board shall adopt a plan which incorporates global perspectives into all areas and levels of the educational program so that students have the opportunity to acquire a realistic perspective on world issues, problems, and prospects for an awareness of the relationship between an individual's self-interest and the concerns of people elsewhere in the world. The plan shall include procedures for a review of its effectiveness.

4.5(12) Provisions for gifted and talented students. The board shall have a program to meet the needs of gifted and talented students. The program shall include valid and systematic procedures, employing multiple criteria, for identifying gifted and talented students including ethnic and language diverse students if such students are enrolled; provisions for curricular programming to meet the needs of identified gifted and talented students; support services, including materials and staff, to ensure that a qualitatively differentiated program is provided; and a procedure for annual review and evaluation for the purpose of program improvement.

4.5(13) Provisions for at-risk students. The board shall have a program to identify and provide special assistance to students who have difficulty mastering the language, academic, cultural, and social skills necessary to reach the educational levels of which they are capable. The program shall serve students whose aspirations and achievement may be negatively affected by stereotypes linked to race, national origin, language background, gender, income, family status, parental status, and disability.

The program shall include strategies for identifying at-risk students and objectives for providing support services to at-risk students. These objectives shall be translated into performance objectives for all school personnel. The program shall also include provisions for in-service training for school personnel; strategies and activities for involving and working with parents; provisions for monitoring the behavioral, social, and academic improvement of at-risk students; provisions for appropriate counseling services; strategies for coordinating school programs and community-based support services; and maintenance of integrated educational environments in compliance with federal and state nondiscrimination legislation.

4.5(14) Curriculum development, review, and refinement. The board shall adopt a policy outlining its procedures for developing, implementing, and evaluating its total curriculum. Each curriculum area shall have goals; suggested instructional activities, materials, and content; and expected student outcomes for each level of instruction. The policy shall identify valid, bias-free student assessment procedures and the process for monitoring student progress.

This policy shall include procedures and timelines for reviewing each instructional program, with attention given to interdisciplinary teaching of higher order thinking skills, learning skills, and communication skills.

4.5(15) Educational program form and content. The educational program, as adopted by the board, shall set forth the administrative measures and the sequence of learning situations which provide pupils with well-articulated, developmental learning experiences from the date of school entrance until high school graduation.

4.5(16) Educational program defined. The educational program is the entire offering of the school, including out-of-class activities and the sequence of subjects and activities. It is also referred to as the program of studies and activities.

4.5(17) Curriculum defined. Curriculum is all pupil experiences that take place under the guidance of the school. It describes both the school experiences of an

individual pupil and the arrangement of a cluster of courses to be taken by groups of pupils having a common objective.

4.5(18) Unit. A unit is a course which meets one of the following criteria: It is taught for at least 200 minutes per week for 36 weeks; it is taught for the equivalent of 120 hours of instruction; or it is an equated requirement as a part of an innovative program filed as prescribed in subrule 4.1(6). A fractional unit shall be calculated in a manner consistent with this standard. Multiple section courses taught at the same time in a single classroom situation by one teacher do not meet this unit definition for the assignment of a unit of credit with the exception that the second and third years of a foreign language may be taught at the same time by one teacher in a single classroom situation each yielding a unit of credit.

4.5(19) Credit. A student shall receive a credit or a partial credit upon successful completion of a course which meets one of the criteria in subrule 4.5(17). The board may award credit on a performance basis through the administration of an examination, provided the examination covers the content ordinarily included in the regular course.

4.5(20) Subject offering. A subject shall be regarded as offered when the teacher of the subject has met the approval standards of the state board of education for that subject; instructional materials and facilities for that subject have been provided; and pupils have been informed, based on their aptitudes, interests, and abilities, about possible value of the subject.

A subject shall be regarded as taught only when pupils are instructed in it in accordance with all applicable standards outlined herein. Subjects which the law requires schools to offer and teach shall be made available during the school day as defined in subrules 4.2(2), 4.2(3), and 4.2(4).

4.5(21) Guidance program. Each board operating a prekindergarten through grade twelve or kindergarten through grade twelve program shall provide an articulated sequential elementary-secondary guidance program to assist students with their personal, educational, and career development. Boards operating less than a full elementary-secondary program shall provide a sequential guidance program covering all grade levels operated. The program shall involve not only counselors but also instructional and noninstructional staff, students, parents, and community members. Facilities offering both visual and auditory privacy for counseling shall be provided. Properly certificated staff shall be employed at all program levels.

4.5(22) School media center and required staff. The board shall establish and operate a media services program to support the total curriculum. Each attendance center shall have a media center except that attendance centers sharing a physical facility could have a single media center. The board shall adopt a policy and procedure for selection, replacement, gift acceptance, weeding, and reconsideration of school media center and text materials. The collection shall foster a nonsexist, multicultural approach for curriculum studies and individual interests. The budget for each media center shall include funds for replacing and updating materials.

Each media center shall be supervised by a qualified media specialist who works with students, teachers, and administrators. A full range of information sources, associated equipment, and services from the media center staff shall be available to students and the faculty. Each media center shall be accessible to students throughout the school day. The school or school district shall develop and implement a curriculum guide covering all grade levels operated for instruction and reinforcement of information search and media skills integrated with classroom instruction.

Division VI
Activity Program

670—4.6(256) Activity program. The following standards shall apply to the activity program of accredited schools and school districts.

4.6(1) General guidelines. Each board shall sponsor a pupil activity program sufficiently broad and balanced to offer opportunities for all pupils to participate. The program shall be supervised by qualified professional staff and shall be designed to meet the needs and interests and challenge the abilities of all pupils consistent with their individual stages of development; contribute to the physical, mental, athletic, civic, social, moral, and emotional growth of all pupils; offer opportunities for both individual and group activities; be integrated with the instructional program; and provide balance so a limited number of activities will not be perpetuated at the expense of others.

4.6(2) Supervised intramural sports. If the board sponsors a voluntary program of supervised intramural sports for pupils in grades seven through twelve, qualified personnel and adequate facilities, equipment, and supplies shall be provided. Middle school grades below grade seven may also participate.

Division VII
Staff Development

670—4.7(256) Staff development. The following standards shall apply to staff development for accredited schools and school districts.

4.7(1) Staff development program. The board shall have a plan for staff development. The plan shall provide for the professional development needs of the instructional professional staff, the noninstructional professional staff, the support staff, and educational aides. The plan shall include general goals for a three-year period and specific objectives and activities for the current school year.

4.7(2) Budget for staff development. The board shall annually budget specified funds to implement the plan required in subrule 4.7(1).

These rules are intended to implement Iowa Code section 256.17.

These rules will become effective from the standpoint of publication in the Iowa Administrative Code, April 27, 1988. Their effective date for compliance by schools and school districts is July 1, 1989, as provided by Iowa Code, section 256.17.

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EDITOR'S NOTE: For replacement pages for IAC, see IAC Supplement, 3/23/88.

APPENDIX D

February 17, 1988

^<S.D.NAME>
^[ADDRESS]
^<CITY> , ^<STATE> ^<ZIP>

Dear Administrator,

The purpose of this letter is to request an ITBS composite score from your current sixth grade class. I am currently the elementary principal of Audubon Elementary School in Dubuque and I am working on a dissertation for my doctorate at Loyola University of Chicago. You are receiving this letter because of the characteristics of your elementary attendance center. Because I know how hectic our positions are, I have tried to minimize the time needed to respond. All information will be held confidential and in no way will the reporting school be identified. Please return the bottom portion of this form in the enclosed self addressed envelope. I am requesting the following piece of information. On the form below would you please supply the 6th grade average composite score. Please indicate if the data is normed from the spring of 1987 or fall of 1987. This data can be found on the last page of the list report of pupil scores for your sixth grade class. You will notice that it supplies both the national and the Iowa scores. I greatly appreciate your assistance and deliberate reply.

Sincerely,

Thomas Emrick
Audubon School, Principal

COMPOSITES

	Basic	Complete
N (no. tested)	_____	_____
IGE	_____	_____
IPR/AVG IGE	_____	_____
NGE	_____	_____
NPR/AVG NGE	_____	_____

Spring 1987 _____ Mid Year 1987 _____ Fall 1987 _____

^<DIST.#>

APPROVAL SHEET

The dissertation submitted by Thomas Alan Emrick has been read and approved by the following committee:

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Associate Professor, Educational Leadership and Policy Studies, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

December 12, 1988
Date

Max A. Bailey
Director's Signature