Indicators affecting the perceptions of the quality of Montana schools
by Richard James Hill

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:
The problem of this study was to determine the importance placed by registered voters of Southwest Montana on selected educational quality indicators when judging or rating their local school system. Educational quality indicators were the independent variables; voters' perceptions was the dependent variable.

The study was conducted during the winter of 1994.

The population was 383 registered voters residing in eight counties located in Southwest Montana. Each member of the sample received a copy of the research instrument along with a cover letter outlining the purpose of the study.

The method of analysis was Multiple Regression. The study attempted to (1) construct a prediction equation; (2) determine the proportion of variability that the regression equation accounted for; (3) the relative importance of the different indicators in making the predictions of the participants' grades or ratings; and (4) say whether the regression of the respondent's grades on the quality indicators were statistically significant.

Two regression equations were statistically significant (alpha = .05) when determining the proportion of variability accounted for by the combined influence of six and nine independent variables taken separately. Only one independent variable, Professional Teaching Conditions, could provide a unique and significant contribution to the prediction of the participants ratings of their local schools.

While statistically significant, it was" concluded that the practical significance of proportion of variability was of little or no utility. With a coefficient of alienation of approximately .90, the utility of the equation is of little practical use. It was also concluded that educational quality indicators should not be used in combination with each other -- that their relative importance may lie more in line with descriptive purposes only.
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QUALITY OF MONTANA SCHOOLS

by

RICHARD JAMES HILL

A thesis submitted in partial fulfillment
of the requirements for the degree
of

Doctor of Education

MONTANA STATE UNIVERSITY
BOZEMAN, MONTANA

May 1994
APPROVAL

of a thesis submitted by

RICHARD JAMES HILL

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ACKNOWLEDGMENTS

I would like to express my gratitude to the many people that have helped me in the completion of this study. I would like to especially thank Dr. Leroy Casagranda for his guidance, assistance, and patience as chairperson of my graduate committee. His support and encouragement proved to be invaluable during this project. I would also like to extend a special thanks to Dr. Eric Strohmeyer for his timely advice. I am thankful for the assistance provided by the rest of my committee: Dr. Donald Cairns, Dr. Ardys Clarke, and Dr. Robert Nowierski. I am especially thankful for the special support provided by Drs. Gloria Gregg and Chris Mattocks.

I am also thankful for the guidance and support my parents, Ernest and Lorna Hill, have provided me over the years.

I wish to thank my wife, Joyce, for her patience and support. Without her love and encouragement, this project may not have been completed. It is to her this work is dedicated.
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ABSTRACT

The problem of this study was to determine the importance placed by registered voters of Southwest Montana on selected educational quality indicators when judging or rating their local school system. Educational quality indicators were the independent variables; voters' perceptions was the dependent variable.

The study was conducted during the winter of 1994. The population was 383 registered voters residing in eight counties located in Southwest Montana. Each member of the sample received a copy of the research instrument along with a cover letter outlining the purpose of the study.

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While statistically significant, it was concluded that the practical significance of proportion of variability was of little or no utility. With a coefficient of alienation of approximately .90, the utility of the equation is of little practical use. It was also concluded that educational quality indicators should not be used in combination with each other -- that their relative importance may lie more in line with descriptive purposes only.
INTRODUCTION

Among the assortment of social institutions, America's elementary and secondary educational system is unique. It is the only social structure which by virtue of compulsory attendance laws, are common to all. Other organizations which once affected everyone, most notably the family, the community, and the church, are now characterized more by diversity than by uniformity. The nation's public schools, however, provide a common social denominator. Because of their universality, and because of the tradition of public involvement in the public schools, they have become, according to Tanner, "a forum where many people have a voice, and where many people seem to 'know' what education is and what it should be" (1993, p. 183).

In support of the nation's schools, the acclaimed economist Milton Friedman (1980) writes:

Americans have always been proud, and with good reason, of the wide spread availability of schooling to all and the role that the public schooling has played in fostering the assimilation of newcomers into its society, preventing fragmentation and divisiveness, and enabling people from different cultural and religious backgrounds to live together in harmony. (p. 150)
American attitudes towards its educational system are paradoxical. There is, on one hand, abundant evidence of a deep commitment to education, if commitment can be measured by numbers of participants and dollars (Ravitch, 1978, p. ix). In the fall of 1990, for example, approximately 61.2 million Americans were enrolled in formal education programs; 41.8 million of these were students in public elementary and secondary schools. Approximately $288.1 billion was spent on education during the 1990-91 school year, 70% of it for public elementary and secondary schools, nearly 7.3% of the gross domestic product. (U.S. Department of Education 1992)

In fact, total spending for elementary and secondary schools more than doubled since 1980 -- while the number of students remain essentially the same. In real terms, education spending increased approximately 33% more per public student. As a nation, more money is invested in education than in national defense. (U.S. Department of Education 1991, p.5)

Yet, on the other hand, this munificently endowed activity is currently caught in a mood of public distrust and frustration. While American's implicitly accept the usefulness and importance of its educational system, they usually do not admire it in its present form. The nation's educational record has become tarnished during the past decade. For example, in 1983, the U.S. Department of
Education released *A Nation at Risk: The Imperative for Education Reform*, a report by the National Commission of Excellence in Education. The 36-page report received extraordinary media coverage. The report contained electrifying rhetoric such as "a rising tide of mediocrity" (p. 5) and "if an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war". (p.5)

The report served as a catalyst for subsequent reports, studies, commissions, and state-level actions. *A Nation at Risk* also fueled the public's discontent with schools and schooling in America. As a group, these reports had created a new political agenda for United States education.

In addition to these reports, a number of politicians and pundits joined in the attack on the schools by expressing their dissatisfaction with the nation's schools. For example:

The conventional wisdom is clear: America's schools are terrible: ALL OF THEM. (Hodgkinson, 1991, p. 32)

Former Secretary of Education William Bennett offered his opinion of the state of the nation's schools:

Unfortunately, however, in recent decades our schools have too often failed to accomplish what Americans rightly expected of them. Though our allegiance to quality education remains firm, our
confidence in the ability of our schools to realize that ideal has been battered by signs of decline: falling test scores, weakened curricula, classroom disorder, and student drug use. (1988, p. 1)

Former Chairwoman of the President's Council of Economic Advisor's, Laura D'Andrea Tyson, believes:

The facts are well known and appalling. We have the highest dropout rate and illiteracy rates among the advanced industrial countries. Our students consistently perform at or near the bottom of almost every group on international examinations in a wide range of subjects. Forty percent of European high-school students can solve math problems that are beyond the ability of 90 percent of American high school students. Japanese high school graduates can solve calculus problems that not even most American college graduates can tackle. The glaring reality is that all of the advanced industrial countries provide high school education for all their students that equal or exceed those that we provide for only our college-bound students. (1993, p. 52)

Other writers have also expressed their dissatisfaction with the nation's schools:

Every Gallup poll for more than a decade has shown a growing public disenchanted for the public schools and for their products. Public displeasure with schooling now extends to every part of the system: the curriculum, the teachers, the administrators, and the graduates. The public condemns every level of schooling from elementary through graduate school. (Sistrunk, 1986, p. 3)

It's no secret that America's public schools are failing. (Fiske, 1991, p. 1)
These examples of educational shortcomings are so familiar we're tempted not to pay them much heed. Why make ourselves miserable? (Finn, 1991, p. 14)

So many people have said so often that the schools are bad that it is no longer a debatable proposition subject to empirical proof. It has become an assumption. (Bracey, 1991, p. 106)

The condition of America's schools even caught the attention of the President of the United States. When George Bush announced America 2000, he said that we've "moved beyond the days of issuing report after report about the dismal state of our schools" (as cited by Bracey, 1991, p. 105).

Not only have the nation's politicians and writers declared war on the nation's schools, it is safe to assume that the public-at-large is voicing their concerns about their schools. A number of national surveys have revealed the public's dissatisfaction with the nation's educational system. For example, 39% of respondents to a 1992 Business Week/Harris Poll rated the quality of American public education as "excellent" or "pretty good," while 59%, or nearly three out of five respondents, rated the schools as either "only fair" or "poor" (Segal, 1992, p. 70).

In a 1991 survey of employers, educators, and parents sponsored by the Committee for Economic Development, only 12% of employers felt high school graduates write well;
only 22% said that they had a good mastery of math (American Educator, 1992, p. 35).

The most recent Gallup/Phi Delta Kappa Poll of the Public's Attitude Toward the Public School (Elam, Rose, & Gallup, 1992) has also denoted a low rating of satisfaction with public school education since the question, "How do you rate your local schools (on an A, B, C, D, F scale)?" was first asked in 1974. When rating the schools in their community for the 1992 survey, schools were graded as A and B by only 40% of those polled. A full 60% rate their community school at the C level or below (p. 45). These percentages are nearly identical to the 1982 ratings of 37% and 63% respectively.

The same question referencing grading schools nationally started in 1981. When asked to rate the nation's schools, respondents were less generous. Only 18% rated the nation's schools at the A and B level, while 70%, or nearly three out of four, rated the schools at a C level or below (12% recorded a "don't know" response) (p. 45).

These judgments are troubling when viewed in relationship to how relatively well-informed the public is about their schools. In the 1987 Gallup/Phi Delta Kappa Annual Poll, the public was asked to appraise its own knowledge of local schools, and the results were troubling. Only 15% of the American public feel well-informed about local schools. Most disturbing is the fact that a majority
of those without children in school (55%) either asserted they are not well-informed or said that they "don't know" (Gallup & Clark, 1987, p. 29).

While the results of these and other polls may be interpreted as valid assessment of public opinion, at least one other poll provided strong evidence of "a mind already made up" (Gough 1992, p. 659). In the winter 1992 issue of Agenda, Louis Harris asked respondents, "How confident are you that the school system in your community, right now, can meet the 'make-or-break' dimensions of schooling (i.e., functional literacy; understanding of math, science, and technology; communication skills; job skill; and problem-solving)?" 19% of respondents said "very confident," 43% said "somewhat confident," 24% said "not very confident," and 13% said "not at all." While these findings may appear to support schooling at the local level, Harris argued that unless parents can say that they are very confident that their own school system can meet the basic needs of education, then all other answers -- even "somewhat" -- must be interpreted "as suggesting deep doubt about the capacity of their school system to deliver. Either your child's education is very good or it is not good at all" (as cited by Gough 1992, p. 659).

Based on the results of these polls that attempt to assess the public's perceptions of their school systems, it is obvious that the nation's educational system is lacking
the very support it needs to accomplish its purpose and goals. However poorly the public perceives its school systems, two companion issues need to be recognized at this time. First, when developing their assessments, what sources of information do community members use to develop their opinions? And second, what are the tangible or intangible cues the public actually uses to development their judgments. The first question will be dealt with in the next few paragraphs. The answer to the second question was the foundation for this study.

It is useful for policymakers to know what sources of information people depend on when they judge the quality of schools in their community. Although "educators have never given newspapers high grades for coverage of education news, people now say that newspapers are their chief source of information about their schools" (Gallup & Elam, 1988, p. 42).

The 20th Annual Gallup/Phi Delta Kappa Poll dealt with this issue when respondents were asked the following question:

What are the sources of information you use to judge the quality of schools in your community; that is, where do you get your information about the schools?

Respondents answered 52% from newspapers, 36% from students, 33% from parents of students, 32% from radio and/or television, 28% from other sources, and 3% did not know. (1988, p. 43)
(Figures add to more than 100% because of multiple answers.)

Research by Pyszkowski (1990) and Tanner (1993) have identified a number of factors that seem to concur with Gallup's findings and believed to be influential in shaping the public's assessment of its school system. Pyszkowski has identified three factors:

1. **The influence of mass communications**  The press' daily reporting of school failures only serve to inflame ire and indignation in the public. Readers of daily newspapers and periodicals get a dose of bad tidings from doomsayers who report plummeting test scores and dismal performance statistics. Thus the general public has no access to an in-depth perspective and explanation; just a rapid flash of a news event followed by a shallow commentary from an anchor person. Public criticism and dissatisfaction with the school community escalates as telecasts of bad news about our schools increases.

2. **Consumers of education**  Consumers of education are a major factor in the area of public dissatisfaction with the educational system. Stories abound of employees who are unable to read and write proficiently. The business community finds that students as potential employees lack the skills necessary for the workplace.

3. **Providers of education**  Providers of education are also culprits in a scenario that fosters negative images of the educational establishment. Entrenched bureaucracies, discontented students, and inept teachers contribute to the public's perceptions of low quality education. (p.305)
Tanner (1990), in turn, has identified three factors that he believes contribute to the public's current negative view of education. He writes:

1. **Public education's image**  The public of *A Nation at Risk* helped crystallize the public's opinion of education. The image portrayed in that report is of an educational system short of acceptable levels of performance, and perhaps even in general decline. The annual Gallup/Phi Delta Kappa poll also sends out a negative message about a community's and the nation's schools.

2. **Social transition and public expectations**  Schools have been called upon to remediate all social ills, in addition to providing universal education. The nation's citizen have a great deal of faith in the public schools and are most willing to look there for solutions to pressing social problems. There appears to be a tacit understanding that if an issue is to be addressed universally, the focal point must be the public school classroom.

3. **The nature of public discourse**  According to Fitzpatrick (1990), the more frequently an issue is discussed the more extreme the positions become: "When members of a group initially are disposed to favor privately one side or the other, in the course of discussion they will arrive at a consensus opinion position that is more extreme in the favored direction than the average of their prediscussion positions." (p. 316) As issues are discussed openly, members of the public adopt less moderate positions and a shift in the average position of the group occurs. (p. 183)
Personal perceptions seem to play an influential role with respect to how parents assess their schools. Bratlinger (1985) concluded from the review of research by Seginer (1983) and Entwisle and Hayduk (1978) that "once students themselves, parents maintain certain perceptions of schools and have feelings and opinions about how their offspring will fare in the schooling process" (p. 14). Bratlinger verified these findings on the completion of her own study involving personal interviews with 35 subjects, describing a total of 100 children. During the interviews, parents volunteered much more information than they were asked for and frequently reminisced about their own schooling. Bratlinger concluded, "it was more common for parents to refer to their own situations than to those of their offspring. Some of the older respondents described injustices that had occurred during their school years, with a great deal of emotion" (p. 17).

Goodlad (1984), in his summary publication entitled A Study of Schooling substantiated these perspective values regarding satisfaction with public education. Goodlad stated that "the relevance and significance of most of what goes on in schools -- all that is not included in achievement measures -- depends on one's perspective (perceptions)" (p. 468). Davis (1990) appears to support Goodlad when she wrote, "there is a general feeling that schools still aren't making it. A lot of people have a
rosy view of what their education was like" (p. 54).

The impact of nation-wide polls and educational critics have left a seemingly indelible mark on the psyche of American public. Americans believe their schools are in trouble and there appears to be no solution to the myriad of problems they face. But as one carefully reviews the results of polls and writings, a problem seems to surface that deserves discussion. When a citizen is asked to grade their local school system or the nation's schools as a whole, what are the indicators or cues they use to make their assessment? If Tanner (1990) is correct with his claim that "many people seem to 'know' what education is and what it should be", what specific indicators do they use to formulate their reply in the form of a traditional letter grade? This question laid the foundation of the design and research of this study.

Statement of the Problem

The problem of this study was to determine the importance placed by registered voters of Southwest Montana on selected educational quality indicators when determining the perceived quality of their local school system.

Contribution to Educational Research

The American public continues to be disappointed with
the results of their educational system. Poll after poll continues to paint a bleak picture of public confidence with their schools. Increased attention to comparative international test scores has contributed to the downward spiral of public confidence.

While designers of national polls provide respondents the opportunity to assess their school with the traditional A, B, C, D, and F grading format, little or no attention is given to the cues or indicators respondents use to determine their assessment. In fact, none of the annual Gallup/Phi Delta Kappa polls to date have given respondents the opportunity to identify the specific quality indicators or cues they use to make their final determination.

It was the purpose of this study to shed light on quality indicators and how individuals form their opinions using a set of identified quality indicators. A search of the literature has exposed no previous studies dealing with the issue of education quality indicators and the public's formulation of quality judgments. This study attempted to contribute to the data base concerning education quality indicators by determining which indicators contribute to an individual's judgment of their school system. It is the researcher's expectancy that information from this study will be significant in providing assistance to school officials in enhancing the public's confidence in their school system.
Definition of Terms

Ideographics: The personal dimension of a social system. (Hoy & Miskel, 1991, p. 35)

Indicator: An individual or composite statistic that relates to a basic construct in education and is useful in a policy context.

Indicator System: A system of indicators that measures distinct components of the system and also provides information about how the individual components work together to produce the overall effect.

Inputs: The continuous inflow of stimulation from the external environment. (Grusky & Miller, 1970, p. 152)

Judgment: The mental or intellectual process of forming an opinion or evaluation by discerning and comparing two or more variables.

Outputs: The exportation of products into the environment. (Grusky & Miller, 1970, p. 152)

Registered Voter: By statute (section 13-1-111, Montana Codes Annotated, 1993), an individual who must be (1) 18 years or older, (2) a resident of the state of Montana, and (3) a citizen of the United States.

Questions to be Answered

The study and its subsequent statistical analysis was designed to answer the following questions:
1. Is there a relationship between the perceptions registered voters of Southwest Montana hold for their local school systems and the set of independent variables Input, Press for Achievement, Access to Knowledge, Professional Teaching Conditions, Ideographics, and Outputs?

2. Is there a relationship between the perceptions registered voters of Southwest Montana hold for their local school systems and the set of independent variables Inputs, Press for Achievement, Access to Knowledge, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment?

3. Does the independent variable, Inputs, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Press for Achievement, Access to Knowledge, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account?

4. Does the independent variable, Press for Achievement, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account?

5. Does the independent variable, Access to Knowledge, provide a significant and unique contribution to the prediction of perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Professional
Teaching Conditions, Outputs, Ideographics, Gender, Community Size, and Educational Attainment have been taken into account?

6. Does the independent variable, Professional Teaching Conditions, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Access to Knowledge, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account?

7. Does the independent variable, Ideographics, provide a significant and unique contribution to the prediction of perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Professional Teaching Conditions, Access to Knowledge, Outputs, Gender, Community Size, and Educational Attainment have been taken into account?

8. Does the independent variable, Outputs, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Access to Knowledge, Professional Teaching Conditions, Ideographics, Gender, Community Size, and Educational Attainment have been taken into account?

9. Does the independent variable, Gender, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Access to Knowledge, Ideographics, Professional Teaching
Conditions, Access to Knowledge, Community Size, and Educational Attainment have been taken into account?

10. Does the independent variable, Community Size, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Access to Knowledge, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Educational Attainment have been taken into account?

11. Does the independent variable, Educational Attainment, provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Access to Knowledge, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Community Size have been taken into account?

**Review of Literature and Related Research**

In order to fully understand the impact of education quality indicators, the following major topics will be developed in the review of literature and related research: (1) Quality, (2) Educational Quality Indicators, and (3) Social Judgment Theory.

**Quality**

Quality is a priority in this country today. Perhaps
more now than at any time in the past, the lack of quality in goods and services is having serious impact on the nation's businesses and schools.

Despite the interest of both business and educational officials, quality remains a term that is easily misunderstood. In everyday speech, its synonyms range from luxury and merit to excellence and value. Companies and school districts appear to use the word differently, as do different groups within each organization. Without further refinement, "continued ambiguity and confusion are inevitable". (Garvin, 1988, p. 39)

As suggested above, quality is an elusive concept, open to varied criteria and perceptions. According to Garvin (1988):

Quality is an unusually slippery concept, easy to visualize and yet exasperatingly difficult to define. It remains a source of great confusion to managers, leading to the frequent but empty claim, "I know it when I see it." (p. xi)

Trying to define quality can be described as being as frustrating as "trying to tack Jello on the wall" (Collins, 1987, p. 11). Robert Pirsig (1974), in his provocative novel, *Zen and the Art of Motorcycle Maintenance* spends over 370 pages trying to define, describe, and explain how it is achieved. *Webster's New 20th Century Dictionary* defines quality as "the degree of excellence that a thing possesses" (1971, p. 1474), while Goens and Clover (1991)
define quality as "the degree of excellence or superiority present in an act, product, service, or institution" (p. 38).

The quality profession has also struggled with the definition of quality for quite some time. Some of the most respected people in the quality profession have advanced their own definitions. Dr. W. Edwards Deming, often referred to as the guru of Total Quality Management, defines quality as "meeting and exceeding the customer's needs and expectations -- and then continue to improve" (Schaff, 1991, p. 6); Deming then extends his definition by describing two different types of quality:

Quality of conformance is the extent to which a firm and its suppliers surpass the design specifications to meet the customer's needs. Quality of performance is the measure, determined through research and sales/service call analysis, of how well products perform in the marketplace (1986, p. 212).

Philip B. Crosby, author of the best-selling book, Quality is Free (1979), defines quality as "conformance to requirements," and the following quotation from his book gives his reasons:

Requirements must be clearly stated so that they cannot be misunderstood. Measurements are then taken continually to determine conformance to those requirements. The nonconformance detected is the absence of quality. Quality problems become nonconformance problems, and quality becomes definable. All through this book,
whenever you see the word "quality," read "conformance to requirements." (p. 17)

Dr. J.M. Juran, another leading authority on quality, has a similar terse definition of quality:

Of all concepts in the quality function (and in this Handbook), none is so far-reaching or vital as "fitness of use." To the user, quality is fitness for use, not conformance to specifications. The ultimate user seldom knows what is in the specifications. His evaluation of quality is based on whether the product is fit for use on delivery to him and on whether it continues to be fit for use. (as cited by Groocock, 1986, p. 24)

After bandying the various professional definitions of quality, a brief look at who Holdbrook and Gorfman (1984) refer to as "ordinary people" may be used to define the word in everyday use. They offer the following insight into this concept:

More relevantly to the purpose at hand, one might ask consumers for the explicit definitions that inform their usage of the word in everyday discourse. When this project began, Holbrook adopted the practice of noting usage of the word quality by stopping people in midsentence to inquire "What do you mean by that?" This interpretation technique suggested that quality is often used as a rough synonym for reliability. In short, when our friends speak of quality, they generally mean that a product is durable and will remain free of defects after continued usage. This view seems to conform to the standards adopted by Consumer Report and other aids to consumers. (p. 35)
The remainder of this review will concentrate on three quality issues that have particular relevance to the nation's public schools. The first, a brief history of the evolution of quality control will be presented. Second, quality efforts in service industries (of which schools belong), will concentrate on the development of an instrument to measure perceived service quality. The third issue will deal with Total Quality Management (TQM), and its applicability to education. And fourth, a brief summary of efforts to bring quality to the schools will conclude the literature review.

Quality Control -- A Brief History. In the United States, the emergence of quality as a formal management function has brought changes to the development of quality control approximately every 20 years (Feigenbaum, 1991). The following dialogue follows the evolution of quality control.

The first step in the development of the quality field, operator quality control, was inherent in the manufacturing job up to the end of the nineteenth century. Under the system, one worker, or at least a very small number of workers, was responsible for the manufacture of the entire product, and therefore each worker could totally control the quality of personal work.

In the early 1990s, manufacturing progressed to the
foreman quality control. This period saw the large-scale advent of the modern factory concept, in which many individuals performing a similar task were grouped so that they could be directed by a foreman who then assumed responsibility for the quality of their work. During this era, Fredrick Taylor, "the father of scientific management" (Hanson, 1991, p. 23), gave the activity added legitimacy by singling quality out as an assigned task for one of the eight functional bosses (i.e., foreman) required for effective shop management:

The inspector is responsible for the quality of the work, and both the workman and the speed bosses (who see that the proper cutting tools are used, that the work is properly driven, and that cuts are stated in the right part of the piece) must see that the work is finished to suit him. This man can, of course, do his work if he is a master of the art of finishing work both well and quickly. (p. 101)

The manufacturing system became more complex during World War I, involving a large number of workers reporting to each production foreman. As a result, the first full-time inspectors appeared on the scene, initiating the third phase, inspector quality control.

This program remained in vogue until the tremendous mass-production requirements of World War II necessitated the fourth phase of quality control, statistical quality control. In effect, this phase was an extension of the inspector phase and boiled down to making the big
inspection organizations more efficient. Inspectors were provided with a few statistical tools, such as sampling and control charts. The most significant contribution of statistical control was that it provided sampling inspection rather than 100 percent inspection.

The final phase, total quality control, was introduced when management finally realized that recommendations from statistical techniques could not be handled by existing decision-making structures (Feigenbaum, 1991). He explains:

Only when firms began to develop a specific decision-making and operating framework for product quality which was effective enough to take suitable action on the quality control findings did the firms obtain genuine results in better quality and lower costs. This total quality framework made it possible to review designs regularly rather than occasionally, to analyze in-process results and take control action at the manufacturing or supplier source, and, finally, to stop production when necessary. (p. 17)

By any name, quality control's focus is on improving the quality of products and services, with the knowledge that cost savings, increased profits, and customer satisfaction will result. Quality improvement programs focus on three elements: continuous improvement, universal participation, and customer satisfaction (Meaney, 1991).

Continuous Process Improvement The philosophy of those who employ quality management recognizes that everything that is done in the development
of products and the delivery of services is a process itself or part of a larger process. It has been found that 85 percent of the problems can be attributed to poor processes, while only 15 percent of the problems can be attributed to poor employees. Workers and managers in quality organizations work side-by-side to improve work processes so that defective-free products and services are produced -- every time.

**Universal Participation** In total quality management organizations, managers realize that employees at all levels in the organization have valuable information about how to improve the work processes to improve the quality of the product or service. In such organizations, it is recognized that perhaps the best information may be obtained from those who are directly on the production line and/or those who directly interface with external customers.

**Focus on Customer Satisfaction** Quality organizations realize that quality is defined by their customers. They understand that they must know customer expectations and meet or exceed those expectations -- every time. (p. 8)

As total quality control came to have a major impact upon management and engineering practices, it has provided the foundation for the evolution in the decade of the 1990s of total quality management, to be discussed later in this literature review.

**Quality and the Service Industry** Service industries are playing an increasingly important role in the overall economy of the United States (Cronin & Taylor, 1992). In fact, the proportion of the U.S. population employed in the service sector increased from 30% in 1970 to 74% in 1984.
Koepp (1987) maintains that this sector is continuing to increase, as 85% of all the new jobs created since 1982 have been in service industries.

There appears to be executive consensus in the United States that service quality is one of the most important problems facing management today (Cronin & Taylor, 1992). A recent survey sheds light on Cronin and Taylor's assertion:

A scant 10% of American service companies today have any kind of quality program, reports Gunneson Group International, Inc., a quality consulting company in Landing, New Jersey. But, it predicts, by the year 2000, perhaps 70% of those with more than 500 employees will have founded quality initiatives. The most aggressive, says Gunneson, will be financial service/providers, health care companies, and government followed by retailers and universities. (Armstrong, 1991, p. 100)

Interest in the measurement of service quality is understandably high and the delivery of higher levels of service quality is becoming a key strategy for service providers. However, the problem inherent in the implementation of such a strategy has been keenly identified by several researchers: service quality is an elusive and abstract construct that is difficult to define and measure (Cronin & Taylor, 1992, p. 55).

Service industries, as compared to manufacturing industries, involve a great deal of uncertainty (Boothe, 1990). In manufacturing, statistical control quality
programs are well-accepted because there is a clear understanding of the production environment and how various activities affect quality. However, this understanding generally does not exist in the service environment.

There are characteristic elements of services that distinguish them from products or goods. Intangibility, heterogeneity, and inseparability are recognized as being characteristic elements that set services apart from goods (Parasuraman, Zeithaml, & Berry, 1985). A brief description of each characteristic follows:

First, most services are intangible, often measured by a performance rather than precise manufacturing specifications. Because of intangibility, it is difficult to understand how consumers perceive their services and evaluate quality. Second, services, especially those with a high labor content, are heterogeneous: their performance often varies from producer to producer, from customer to customer, and from day to day. Consistency of behavior from service personnel is difficult assure. And third, the production and consumption of many services are inseparable. Quality in services are not manufactured at the plant, then delivered to the consumer. Instead, labor intensive services occur during service delivery, usually in an interaction between the client and the service's representative. (p. 42)

In a detailed investigation of service quality, Parasuraman, Zeithmal, and Berry (1985) developed an elaborate model of service quality that incorporates the forementioned characteristics. Detailed qualitative
interviews of service providers resulted in specification of service quality measure instrument, SERVQUAL, that is suggested as a universal measure of perceived quality work.

Their preliminary work produced a list of ten service quality determinates that, regardless of service type, are theorized to be used by consumers in evaluating service quality. These determinates or principal dimensions include:

- **Tangibles.** The appearance of physical facilities, equipment personnel, and communication materials.

- **Reliability.** The ability to perform the promised service dependably and accurately.

- **Responsiveness.** The willingness to help customers and to provide prompt service.

- **Assurance.** The knowledge and courtesy of employees and their ability to convey trust and confidence.

- **Empathy.** The provision of caring, individualized attention to customers (Parasuraman, Zeithaml, and Berry, 1988, p. 23).

An important question at this juncture is how service quality relates to education. While reviewing the literature, many writers have identified education and/or schools under the umbrella of service industries (see Stebbing, 1990; Ginzberg & Vojta, 1991; Mills, 1986; Voss, Armistead, Johnston, & Morris, 1985; Heskett, 1986; Gershung & Miles, 1983; Lovelock, 1983; and Deming 1982). Since Parasuraman Zeithaml, and Berry maintain their model
"transcends different types of services" (1985, p. 49), an argument can be made that the listed principal dimensions of their model could be used as ancillary indicators for assessing the quality of schools or school systems.

Total Quality Management. The birth of Total Quality Management (TQM), like most later TQM efforts, was "in adversity" (Pines, 1990a, p. 85). During World War II, the War Department brought together a small group of experts on statistical process control to help establish quality guidelines for defense contractors. Using statistical methodology developed by Walter A. Shewart, American manufacturers were able to design and produce superior military equipment. As noted in David Halberstam's book, The Reckoning (1986), Japanese engineers studying captured American planes realized by 1942 that Japan's military fortunes were doomed.

As they examined captured material they were sickeningly aware that the Americans were turning out better-made machines -- machines that were obviously mass produced -- and that Japanese pilots were being sent into the skies hopelessly mismatched. Even in the postwar years, the Japanese were embarrassed by the shoddiness of their goods. If it rained in Tokyo, ten thousand phones might be out of order. (p. 314)

TQM was a major factor in the "phoenix-like resurrection" of Japan's post-World War industrial comeback (Bonstingl, 1992a, p. 4). American statistical
experts, including W. Edwards Deming, Joseph Juran, and Armand Feigenbaum, were instrumental in teaching Japanese manufacturers how to reverse their well-established reputation for shoddy, cheap goods by designing quality into their work systems.

In 1949, Deming was asked by the State Department to go to Japan to help prepare for the 1951 Japanese census. During this trip, a group called the Union of Japanese Scientists and Engineers (JUSE) had organized to aid the reconstruction of their country. The JUSE members were studying Shewart's statistical quality control techniques. Once they discovered Deming had worked with Shewart, Deming was asked to lecture to JUSE members on quality control methods.

Deming told them "that quality was essential to their survival" (Pines, 1990a).

He urged them to work in partnership with their vendors to develop instrumentation and to gain control over their processes. He then stunned this island nation, which for years had relied on its internal markets. He explained to them that the consumer is the most important part of the production line. The Japanese top management hearkened to Deming's words. They learned to revere the international customer, and the rest is history. (p. S8)

It was not until three decades after Deming's lecture tour of Japan "that Americans finally discovered Deming"
Once again, adversity was the necessary catalyst.

In the late 1970s, American industry started taking note of Japanese successes in the international marketplace. The U.S. trade deficit was growing larger every year, as goods produced in this country "were shunted aside even by domestic consumers in favor of goods made in more quality conscious societies, including Japan" (Bonstingl, 1992b, p. 16). As many of the country's industrial leaders soon discovered, Deming's primary principle "is an exacting, never-ending proposition that pins the responsibility for long-term quality enhancement squarely on the shoulders of management rather than on the rank and file" (Gabor, 1991, p. 6). According to Deming, 80-90% of problems in an organization can be traced to systemic causes -- practices, roles, expectations, and traditions over which individuals have little control. Therefore, "when problems arise, management should look for causes in the system and work to remove them, before casting blame on workers" (Willis, 1993, p. 1).

With its focus on consumer satisfaction and employee empowerment, Total Quality Management rests on two basic tenets (Weaver, 1992):

The first and most important is that customers are vital to the operation of the organization. Without customers, there is no business, and without business, there is no organization. Consequently, it should be the primary aim of all
groups to keep customers satisfied by providing them with quality products.

These ideas are not foreign to most organizations; what makes TQM unique is its call for a restructuring of management methods to create that quality. TQM proponents urge organizations to turn near-sighted, top-down management "on its head" by involving both customers and employees in decisions. This second tenet, that management needs to listen to nontraditional sources of information in order to institute quality, is based on the belief that people want to do quality work and that they would do it if managers would listen to them and create a workplace based on their ideas. (p. 10)


Western style of management must change to halt the decline of Western industry, and to turn it upward . . . There must be an awakening to the crisis, followed by action, management's job (as cited by Hunt, 1992, p. 58).

According to Deming, "management in the United States suffers from deeply entrenched diseases that are potentially fatal unless corrected" (Walton, 1986, p. 89). The American quality crisis is being prolonged by what Deming calls the Seven Deadly Diseases associated with traditional management practices. The Seven Deadly Diseases include:

1. Lack of constancy of purpose.
2. Emphasis on short-term profits.
4. Mobility of management.
5. Running a company on visible figures alone.
6. Excessive medical costs for employee healthcare.
7. Excessive costs of warranty, fueled by lawyers who work on the basis of contingency fees.

To eliminate these underlying managerial diseases, Deming prescribes his 14-point cure, the philosophical foundation for Deming's managerial transformation, and the role assigned to statistical quality control in the execution of that philosophy. In his 1986 book, *Out of the Crisis*, Deming identified his 14 points as:

1. Create constancy of purpose.
2. Constantly improve every system.
3. Eliminate numerical goals and quotas.
4. Drive out fear.
5. Institute leadership.
6. Stop awarding business solely on the basis of price.
7. Break down barriers between departments.
8. Institute training on the job.
11. Abandon slogans.
12. Cease dependence on mass inspection.
13. Adopt the new philosophy of quality in its entirety.
14. Structure management to accomplish the transformation.

*Quality Education.* Although schools have been criticized for poor quality, that charge is not reserved for education alone. According to Goens and Clover (1991):

Questions about quality have been raised with respect to many facets of U.S. life. In business, tolerance for defects based on what was afforded became a standard in many companies.
Quality and profit were seen as competing values, and quality lost. The world of government and politics has been altered drastically by modern technology and media, but the quality of the dialogue has been trivialized. Style has overcome substance. In the automobile industry, quality was the victim of volume — making more faster. Work lost meaning, pride dissipated, and negative worker attitude toward the product and the company resulted. Managers appealed to pride of workmanship through symbolic slogans like "Quality is Job One" to raise standards (p. 38).

The level of quality in education is an important issue for "American schools have been charged with the mission of restructuring in order to provide an educational process that can compete in today's world" (Meaney, 1991, p. 8). However, restructuring schools to compete in today's world will require a dramatic shift in management philosophy. Most educational revisionists seem to equate improved educational quality with reform at the top. After all, W. Edwards Deming, the "dean of TQM" (Pines, 1990b, p. S29), maintains that 80-90% of problems can be traced to systemic causes -- over which management is responsible (Willis, 1993).

The identification of a quality education, not to mention philosophical differences over how to achieve and measure it, is "undoubtedly a Herculean endeavor" (Del Valle, 1991, p. 140). A number of educational leaders (Shanker, 1990; Goodlad, 1984) have pointed out that the major obstacle to enhancing educational quality is the
current educational management paradigm modeled after the old business paradigm of Taylorism — the basis for the assembly-line method that permitted mass production of automobiles — a system "that is no longer functional" (Blankstein, 1992, p. 71).

As David Kearns, former CEO of Xerox and former Deputy Secretary of Education, suggested schools need a design that is relevant for present times:

The modern school should look less like a factory and more like our best high-tech companies; with lean structures, flat organizations, and decision making pushed to the lowest possible levels . . . (with) fewer middle managers, and those that remain act(ing) less like controllers and more like colleagues and collaborators (Doyle and Kearns, 1988, p. 38).

While an exact definition of quality education that would apply to all situations is extremely elusive, Glasser (1990) maintains "we are generally capable of recognizing quality when we see it" (p. 427). He elaborates further:

Ask any school administrator to take you through his or her school and show you some high-quality work in any subject area, and I am certain that you will agree that what you are shown is of high quality. What is similar about all the work you would be shown is that none of it could be graded or measured by a machine. True quality can never be. Furthermore, it is almost impossible for us to do or see anything without making a fairly accurate appraisal of the quality of what we see or do (p. 198)

Educators and others practicing quality are making a
conscious effort "to improve schools, the lives of children, society, and themselves through a set of principles and practices that are constantly evolving." (American Association of School Administrators, 1992, p. 3)

Some of the widely agreed-on tenets of quality schooling include:

1. Meeting and exceeding the needs of "customers"
2. Working for continuous improvement.
3. Collaborating with other agencies.
4. Identifying common and special causes of variation.
5. Seeing problems as stemming from the system and its processes, not the employees or students.
6. Working in teams.
7. Investing in employee education and training.
8. Believing that people want to do well and will take responsibility when they see a purpose for their work. (AASA, 1992, p. 3)

The movement to introduce quality principles into American schools has highlighted a number of models for restructuring education. Instructional and organizational reforms such as effective schools, essential schools, cooperative learning, site-based management, and outcome-based education, along with total quality management, have been developed and introduced in an attempt to provide quality American schools.
However, today's call for quality schools is a growing recognition that America's public education system must respond with something more than piecemeal tinkering or reorganizing under new rubrics. It appears that the nation's schools are facing the same quality issues America's businesses were facing during this past decade. A declining confidence with the nation's businesses certainly parallels a similar decline in America's educational systems.

A strategy adopted to improve the business world is beginning to take root in education. Total Quality Management is slowly being recognized by a number of school administrators and boards of education. While the basic elements of Total Quality Management are covered elsewhere in this review, one key point closely related to the charge of this study deserves further review.

School systems attempting to implement TQM are faced with the changing perspective of their customers. Quality school systems soon realize that quality is defined by its customers. They understand that they must know customer expectations and meet or exceed these expectations.

Since quality is defined by the customer, school organizations must design and develop its systems around the customer's point of view. Without customer focus and involvement, "both constancy or purpose and commitment to quality become meaningless" (Hunt, 1992, p. 32). Increased
customer satisfaction is the ultimate result of customer focus and involvement.

Just as school systems are subject to changing regulatory and social forces, changing customers' needs must also be taken into consideration. As Hunt explains: Customer requirements for a variety of reasons, are often uncontrollable and unpredictable. To serve its customers adequately, therefore, the organization must continually reassess its customers' needs and requirements and anchor them into its improvement efforts. Failure to consider customers and to actively involve them in the improvement effort is a fatal flaw in an organization's quality philosophy (1992, p. 34).

In order to capture quality from the customer's perspective, school districts should consider conducting a customer needs analysis to determine the key indicator(s) that are important to its customers. School officials should consider such questions as:

1. What are the major indicators school district's customers tend to pay attention to?

2. Is there a tendency for customers to depend on one or a combination of indicators when defining a quality education?

3. How can school officials measure the performance of these key indicators?

4. Do customers establish performance standards on the selection indicators?

5. How can school officials measure these standards?
This perspective, the focus on the customer's perceptions of a quality education, was the focus of this research study. This study attempted to clarify the role of key education quality indicators from the customer's point of view.

Education Quality Indicators

The current emphasis on educational reform has led to greater accountability and an increase in monitoring and evaluation of schools and school systems. According to McEwen and Chow (1991), a critical component of an accountability system is information. In order to determine what type of information to collect, many organizations are developing and implementing indicators systems. Odden (1990) reports:

Educational indicator systems have become a major "business" in the United States. Although its intellectual roots are found in the social indicators movement of the late 1960s and 1970s, its focus today is clearer, its linkages to policy issues are much stronger, and both technicians and policymakers want educational indicator systems to be developed. Educational indicators appear to be something that will remain on the American educational landscape for some time to come. (p. 24)

Attempting to describe educational indicator systems definitionally is a difficult task due to the large number of authorities in the field. According to Oakes (1986), an educational indicator "is a statistic about the educational
system that reveals something about its performance or health" (p. 1). Smith (1988) adds that an educational indicator "either assesses or is related to a desired outcome of the educational system or describes a core feature of that system" (p. 487). McEwen and Chow (1991) describe an indicator system as a tool for reform and improvement, but not "synonymous with a testing or assessment program" (p. 66). Put more succinctly, the recent Rand report on educational indicators argues that an educational indicator is an "individual or composite statistic that relates to a basic construct in education and is useful in a policy context" (Shavelson, McDonnell, & Oakes, 1989, p. 5).

The goals, or intended benefits, of implementing indicators systems are to improve education, to provide a mechanism for accountability, and to assess the efficiency and effectiveness of the educational enterprise (McEwen & Chow, 1991). An educational indicator system should provide:

1. Information that is feasible to gather, valid, and useful for policy decisions;

2. Logical clusters of indicators to increase the system's interpretative power;

3. Points of reference such as previous value, the value of a comparison group or some socially determined standard;
4. Measures of the ubiquitous features of schooling that are: enduring, easily understood, feasibly measured, and generally accepted as valid and reliable statistics; and

5. A reporting system that is accurate and timely. (Oakes 1986, Selden 1988, as cited by McEwen and Chow, 1991, p. 66)

The evolving system of American educational indicator systems was precipitated by the release of *A Nation at Risk* (National Commission of Excellence in Education, 1983) and subsequent reports that provided a dearth of information about schools and schooling (Selden, 1988). This veritable avalanche of quality indicator activity in the United States is a direct consequence of the push of educational reforms nationally (Burstein, 1988). He explains:

Since the election of Ronald Reagan in 1980, there have been substantial changes in federal educational policy. The changes have generally been to reduce the federal role in direct support of educational programs, especially those targeted to specific constituencies. Both guidelines and financial support have been reduced, consistent with the administration's philosophy of state and local control and financing of education, which coincidently justifies cuts in federal support for education. To maintain their presence in the national educational arena, the Reagan administration has chosen to highlight its responsibilities for gathering and reporting the status of education and educational reform. The release of *What Works: Research About Teaching and Learning* (U.S. Department of Education, 1986), a selective compendium of 41 research findings and related references, and *First Lessons: A Report on Elementary Education in American* (Bennett, 1986)
are indicative of the manner in which the Department of Education intends to exert leadership (p. 77).

Such is the dropback against which quality educational indicator activities in the United States may be interpreted. Strong pressure for improvement, a need or means to assess the impact of educational reform, and consequential political maneuvering to determine who sets the standards and who measures progress toward them.

This attention to the evaluation of public education has been expanded to include a bevy of "new actors." The major new actor is "the public" and its elected representatives (Burstein, 1988). In the past, educational establishments at the federal, national (e.g., the national teachers and administrators organizations) and state (e.g., chief state school officers and state boards of education) retained much of the functional control over educational policies and practices. Now governors and state legislatures are increasingly becoming involved in establishing educational policies and standards and the means to measure achievement and progress.

Agencies and organizations at both the federal and state levels have been actively engaged in quality indicator developments. Although the United States does not yet have an indicator system, several indicator initiatives have been inaugurated. A selective sampling of
indicator efforts by federal, state, and international level agencies would include at least the following:

1. The U.S. Department of Education's "Wall Chart"

2. The National Center for Education Statistics (NCES)

3. The Council of Chief State School Officers

4. The California Educational Indicator Initiative

5. The Utah Quality Indicators Report

6. The International Educational Indicators (INES) Project

7. The Alberta Educational Quality Indicator (EQI) initiative

8. The Austin (Texas) Independent School District Summary of Quality Indicators

U.S. Department of Education Since 1983, the U.S. Department of Education has published State Education Statistics charts (a.k.a. "the Wall Chart"). The first chart was produced about a year after the release of the United States educational reform report, *A Nation at Risk* (National Commission on Excellence in Education, 1983). The intent of the wall chart was to provide comparative data that indicated key features -- inputs and outputs -- of each of the 50 state educational systems in the United States (Odden, 1990).
For each state, the wall chart included the following output, or student performance, indicators:

- average score on the American College Testing (ACT) test and percentage of seniors taking the test (28 states)
- average score on the Scholastic Aptitude Test (SAT) and percentages of seniors taking the test (22 states)
- high school graduation rate

The wall chart also included the following resource input indicators:

- average teacher salary
- pupil/teacher ratio
- pupil/total staff ratio
- federal funds as a percent of school revenues
- current expenditures per pupil
- expenditures as a percentage of income per capita

Negative reaction to the wall chart has continued over the years. Odden (1990) reports that the production of the wall chart caused strong negative reactions for at least three reasons:

1. The United States had never before directly compared educational outcomes on a state-by-state basis.

2. State political and educational leaders were not centrally involved in developing the categories of data that would be included in the wall chart.

3. Good data (i.e., reliable and valid data) were not available to make comparisons (p. 25).

He maintains the wall chart falls short of being an indicator system on several counts, and two stand out:
First, it has no process variables and thus excludes several key measures of the country's educational system. Second, and more important, it is published each year without an analysis report that seeks to make sense of the data. Although it is released each year at a press conference, at which the Secretary of Education gives political meaning to what he thinks the indicators say, a politicized press release is very different from neutral, analytic report of the meanings of the indicators (p. 26).

National Center for Education Statistics  The National Center of Education Statistics (NCES) gathers and publishes information on the status and progress of education in the United States. The Federal authorization (enacted in 1974 but with antecedents to 1867) for these activities states that the Center will "collect, collate, and, from time to time, report full and complete statistics on the condition of education in the United States" (section 406(b)(1) of the General Education Provisions Act).

The NCES began presenting statistical information as education indicators with the 1986 edition of The Condition of Education. Since then, the indicators have been developed through studies carried out by the center, as well as from surveys conducted elsewhere within and outside the Federal Government. Baker (1989) describes this development process:

Although indicators may be simple statistics, more often than not, they are analysis -- examining relationships; showing changes over
time; comparing or contrasting subpopulations, regions, or states; or studying characteristics of students from different backgrounds. Data used for these indicators are the most valid and representative education statistics available in American today for the subjects and issues with which they deal.

The indicators, therefore, represent a consensus of professional judgment on the most significant national measures of the condition and progress of education at this time, but tempered necessarily by the availability of current and valid information. (p. iii)

Council of Chief State School Officers As a partial response to the wall chart, the Council of Chief State Officers (CCSSO) created a State Education Assessment Center with the mission of producing, or causing other federal agencies to produce, reliable and valid data on state education systems. The center produces a wide range of comparable data (including student test scores) on the educational systems of each of the 50 states, and influencing federal agencies to alter data collection activities to produce new, accurate, and valid information that can be used to compare states. In addition, the center has been conducting research related to indicator development systems that may prove useful for nationwide policy purposes.

The CCSSO model has three components (Blank, 1989, p. 3):
1. Indicators of Educational Outcomes
   - graduation rate and dropout rate
   - student achievement
   - post-high school status

2. Indicators of school Policies and Practices
   - graduation requirements
   - teacher preparation and certification
   - school participation

3. Indicators of Contextual factors, or State Characteristics:
   - school system demographics
   - population characteristics
   - resources
   - student needs

The goal of the model is to relate educational outcomes to state program policies and practices, accounting for factors outside the education system that determine, to some extent, what schools can accomplish. This gives, according to Blank, "the indicators explanatory power that they would not have as individual variables, because the scheme is intended to model, based on research, educational inputs and outputs and the relationship between them" (1989, p. 3).

California Educational Indicator Initiative Over the years, California has created a data infrastructure that allows it to produce indicator systems. It has developed a comprehensive school-by-school data system that can provide detailed information on students, teachers, school context, curriculum, instruction, and student performance. These
kinds of data, according to Odden (1992), constitute the backbone of a school-based educational indicator system; without these or similar data, "an indicator system cannot be created" (Odden, 1992, p. 27).

California's state-initiated indicator project is composed of three parts: (1) Quality Indicator Reports, (2) an expanded student testing program, and (3) Proposition 98 School Report Cards. Shortly after California enacted its 1983 comprehensive education reform program, Senate Bill 813, Bill Honig, California's chief state school officer, created Quality Indicator Reports as a mechanism to report to the legislature and the public on the progress and impacts of that reform program. The report include the following data (Fetler, 1986, p. 32):

1. Percentage of seniors enrolled in various academic courses, including mathematics, English, science, Physics, Chemistry, History, and foreign language.

2. Number of units required by the district for graduation.

3. Percentage of students meeting the State Board model graduation requirements.

4. Percentage of students enrolled in courses that qualify as requirements for admission to the University of California ("A-F requirement") and the percentage of graduates meeting the A-F requirements.
5. CAP reading and mathematics achievement scores, including overall percentage correct and the percentage of students falling above the first quartile, the median, and the third quartile for the state.

6. Percentages of seniors taking the Scholastic Aptitude Test (SAT), their verbal and mathematics averages, the percentage scoring above 450 on the verbal examination or above 500 in mathematics.

7. Average College Board achievement test scores for the Test of Standard Written English, English Composition, Mathematics Level 1 and Level 2, and the American History examinations.

8. Percentages of seniors scoring 3 or better on an Advanced Placement examination administered by the College Board.


The California State Department of Education annually publishes a Quality Indicator Report for the state as a whole and one for each district; it recommends that each local district augment the state report with additional indicators and comments. Even though the Quality Indicator Reports launched the state on a path of reporting not only several key outcomes but also several key process variables ostensibly related to, and perhaps even causing, those outcomes.

The second California initiative was an expanded state testing program. For over 15 years, the California
Assessment Program (CAP) provides criterion-referenced student achievement data on a school, district, and state basis. Its primary purpose is to indicate to policymakers at the school, district, and state levels the impact of the system on student performance in key academic areas.

Finally, the California schools are now annually required to prepare and disseminate School Accountability Report Cards. The accountability report card is considered an important component of the proposition to maintain public accountability for the additional funds the proposition likely would target to education. The report card must include an assessment in each of the following 13 areas (Honig, 1989, p. 2):

**Inputs**

1. What are the estimated expenditure per student, and types of services funded?

2. What constitutes teacher and staff training, and curriculum improvement programs?

3. What is the availability of qualified substitute teachers?

4. What is the availability of qualified personnel to provide counseling and other student support services?

**Process**

5. How safe, clean, and adequate are school facilities?
6. What kind of classroom discipline is there and what is the climate for learning?

7. What process is there toward reducing class sizes and teaching loads?

8. What is the quality and currency of textbooks and other instructional materials?

9. How many teachers are assigned outside their subject areas of competence?

10. How adequate are teacher evaluations and opportunities for professional improvement?

11. What is the quality of instruction and leadership?

Outcomes

12. What is the student achievement in and progress toward meeting reading, writing, arithmetic, and other academic goals?

13. What is the progress toward reducing dropout rates?

Information for all of these categories of data are currently collected by the state and will be made available to each local school and school district. Although they are not organized as presented above, the categories of data required for this report card are close to the full complement of data variables that Rand suggests should constitute the core variables for a full-fledged educational indicator system. Potentially, these report cards could become
a penetrating analysis of the education systems in all of California's schools and school district (Odden, 1990).

**Utah State Department of Education** Since 1967, the Utah State Office of Education has been systematically monitoring the academic performance and other characteristics of Utah students. Their annual publication, *Educational Quality Indicators*, examines several kinds of measures which describe the quality of education in Utah. According to Nelson (1986),

The focus of Quality Indicators is on the outcomes of education — the knowledges, attitudes, and skills which students acquire. Quality Indicators reports the results of various testing programs and sources of information to provide a broad picture of student academic performance and other school-relevant characteristics (p. 1).

The focus of Quality Indicators has three major sections reflecting student performance (Nelson, 1986):

1. **Academic Achievement**
   - mathematics
   - reading/language arts
   - science
   - social studies
   - art and music

2. **Student Characteristics**
   - student academic self-concept
   - educational aspirations
   - peer relations
   - career development
3. Patterns of Course Taking

- enrollment patterns in intermediate and higher course levels of mathematics, science, and foreign languages
- student attitudes toward school
- student evaluation of schooling

The International Educational Indicators (INES) Project

The Organization for Economic Cooperation and Development (OECD) recently completed an 18 month exploratory phase and is near completion of the Intentional Educational Indicators (INES) Project. Originally, INES was divided into five networks, each of which is the responsibility of a particular country (Walberg, 1990). These were:

1. Enrollment, educational career paths, and school leavers at various stages (Australia)
2. Education outcomes (United States)
3. The functioning of schools (France)
4. Assessing costs and resources (Austria)
5. Attitudes and expectations (Netherlands) (p. 32)

The next and final stage of the INES will finalize the conceptual and analytical framework for the production of indicators and delineate an indicator system.

This international project adopted a systematic scheme as a framework for the development and interpretation of indicator systems: environment, resources, and effects (Nuttal 1990, as cited by McEwen & Chow, 1990). An understanding of the effects or outcomes of education must
be informed by the educational processes employed and resources (fiscal and human) deployed, against the background of contextual factors in the environments of schools or of education systems. Six principles guide the work of this project:

1. Indicators are diagnostic and suggestive of alternative action, rather than judgmental;

2. The implicit model underlying a set of indicators must be made explicit and acknowledged;

3. The criteria for the selection of indicators must be made clear and related to the underlying model;

4. Individual indicators should be valid, reliable, and useful;

5. Comparisons must be done fairly in a variety of ways (e.g., with like groups, with self over time, and using dispersions and differences between subgroups as well as average); and

6. The various consumers of information must be educated about its use. (McEwen & Hau, 1990)

Alberta’s Educational Quality Indicator Initiative The Alberta Educational Quality Indicator (EQI) initiative is a collaborative endeavor between Alberta Education and 12 school jurisdictions to develop indicator systems to measure the success of the educational enterprise in the province. This three-year initiative has three components (McEwen & Chow, 1991, p. 68):
1. Indicator systems (meeting three criteria: an interpretative framework to describe variation among students and schools; student outcomes related to the educational enterprise; and point of reference for comparing results);

2. Methods (to collect, analyze, and interpret the information); and

3. Reporting and dissemination (to inform diverse audiences of the results).

A four-dimensional model of education was developed to guide this initiative. It consists of partners (schooling, family, society), conditions (context, inputs, processes), student outcomes (cognitive, affective, behavioral) and time (grades 3, 6, 9, 12) (McEwen & Zatko, 1989). Each participating school jurisdiction is currently developing and will implement a local indicator system that represents its educational goals and priorities and reflects the local community's expectations. The information generated from the 10 concurrent collaboration action research projects will assist Alberta Education to develop provincial indicators. The interpretation and recommended directions of the local indicator projects, together with other provincial initiatives, is expected to provide a solid foundation for the implementation of an efficient and effective information system that measures the success of the educational enterprise in the province (McEwen, 1990).
Austin (Texas) Independent School District: The Austin, Texas Independent School District (AISD) is one of a few public school districts that has developed its own educational quality indicators. AISD school officials prefaced their 1987 report as follows:

While various measures of student achievement are fundamental and form the "bottom line" in education, other measures such as the dropout rate and the percentage of graduates going to college are also important. (p. 3)

The Austin Independent School District used the following indicators for its annual report:

1. Student achievement
   - standardized achievement test scores
     (compared on both the national and state level)

2. College-bound students
   - SAT scores
   - National Merit Scholarship competition

3. Basic skills development
   - reading, writing, and mathematics interstate ranking

4. Other outcomes
   - average daily attendance
   - high school graduation rate
   - grade-level retention rate
   - high school dropout rate
   - college attendance

At the heart of the efforts of identifying educational quality indicators on either an international, state, or local efforts is the following question: What indicators
will be most valid and useful? There is considerable consensus that monitoring and accountability systems need multiple indicators (Murane & Raizen, 1988; Shavelson, McDonnell, Oakes, & Carey, 1987; Office of Educational Research and Improvement (OERI) State Accountability Study Group, 1988). There is less agreement, however, about what these indicators should be.

One issue under discussion is whether or not to include measures of the schooling process (Oakes, 1989). Many states' accountability systems, for example, now consist only of input or outcome indicators. Typical measures are state revenues, federal funding, test scores, and high school graduation completion rates. Some research have suggested that improved outcome indicators promise to contribute most to our understanding of the performance of the educational system (MacRae & Lanier, 1985; Murane, 1987).

In rebuttal to this stance, Oakes (1989) argues that "indicators of the schooling context are as necessary as outcome indicators" (p. 182). She continues:

Policy makers need information about the resources, policies, organizational structures, and processes that characterize schools. Such information is essential if they want monitoring and accountability systems to mirror the condition of education accurately or to be useful for making improvements. From this perspective, the benefits of context indicators far outweigh the risks of not including them.
Deciding which context factor to include in an indicator system poses problems. Oakes explains:

We have only limited understanding about which school features most influence the quality of classroom experiences. We don't fully understand which of these function as the most important mediators between school resources and student results. (1989, p. 185)

In an attempt to identify promising school-level indicators, Oakes' review of schooling revealed three global school conditions that emerged as ideal targets for indicator development. The first is access to knowledge, the extent to which schools provide students with opportunities to learn various domains of knowledge and skills. The second condition, press for achievement, is the institutional pressure that the school exerts to get students to work hard and achieve. The third feature is professional teaching conditions, the conditions that can empower or constrain teachers and administrators as they attempt to create and implement instructional programs (1989). Based on her research, the concepts of access to knowledge, press for achievement, and professional conditions for teaching "become good candidates for composite school-level indicators" (Oakes, 1989, p. 193).

In her concluding remarks, Oakes (1989) recognizes "as with outcomes measures, however, a central paradox is that the context features that are most easily recognized,
measured, and reported may be the least likely to provide useful insight into school quality" (p. 195). She continues:

Available evidence suggests that access, process, and professional teaching conditions are central conditions linked to educational quality. However, these conditions are elusive, complex, and sometimes intangible. Recognizing this reality, those involved in developing indicator and accountability systems face a social and scientific challenge of considerable magnitude.

Shavelson et al. (1989) appears to support Oakes' contention that educational indicators should represent more than inputs and outputs. Instead of using Oakes' term "context," Shavelson choice for this perspective is "processes." He maintains:

National indicators must represent, at least roughly, the important components of an educational system. In addition to monitoring outcomes, indicators should reflect the characteristics of students and communities served by schools, the financial and human services (especially teachers) available to the schools, and other educational inputs. Moreover, they should reflect the adequacy of the curriculum and instruction received by students, the nature of the schools as an organization in pursuit of educational excellence and equity, and other educational processes (p. 7).

Social Judgment Theory

Judgment and decision making play a pervasive role in human affairs (Hammond, Rohrbaugh, Mumpower, & Adelman,
Because judgment is extremely common and extremely important, particularly in uncertain environments, "the study of the judgment process has become increasingly widespread" (Rohrbaugh, 1979, p. 73). Cooksey and Freebody (1986) report that "in recent years, large strides have been taken in the study of human judgment, policy foundation, and decision making" (p. 17).

Arriving at a concise definition of judgment is a difficult task at best. Yates (1990) describes judgment as "an opinion about what is (or will be) the status of some aspect of the world" (p. 6), while Dhia and Markham (1986) define judgment as "a process through which an individual uses social information to make decisions" (p. 600). Rohrbaugh (1979) offers yet another definition of judgment as "an inferential cognitive process whereby a person uses available information to draw conclusions about unknown qualities or quantities" (p. 73).

Hammond (1971) maintains that the human judgment process has three fundamental characteristics. It is (a) covert, (b) inaccurately reported, and (c) inconsistent. He explains further:

Covertness means that reporting one's judgment processes is subjective. It is seldom possible for an individual to describe his or her judgment process accurately. Ordinarily, introspection or observation of the judgments and guessing at the reasons for them are the only means of actually "uncovering" and "explaining" judgments. Inaccurate reporting means that such explanations
are incomplete and misleading. This is not due to evil intent but rather because of the fallibility of subjective reporting. Inconsistency of the judgment process means that identical circumstances do not always lead to identical judgments. Judgments is inconsistent because human judgment is not a fully analytical and controlled process; therefore, inconsistency is an inherent characteristic. (as cited by Dhir & Markham, 1984, p. 600)

The judgment process of an individual may be explained by posing the following questions (Dhir & Markham, 1986):

1. What factors influence judgment?

2. What relative emphasis does the individual put on each of the factors?

3. How does the individual integrate the information regarding each cue to arrive at an overall judgment?

4. What is the consistency with which the individual is able to make a judgment? (p. 601)

Policy formation is based on both judgmental and analytical processes (Flack & Summer, 1971). They explain:

If policy were developed only through the analysis of data and if optimum plans were derived from an objective function standpoint, communication among decision makers would be straightforward. Actual decision making, however, is almost judgmental. Participants in policy formulation base their decisions only in part on explicit sequential relationships. They also use thinking that is implicit and nonrecoverable. That is, the participant cannot report exactly how he comes to a decision; it is the result of "best judgment". (p. 1411)
Judgment-making tasks can be placed on a continuum of "intentional depth depending upon the number of relevant variables in the task environment to the degree of their relationship to the unknown quantity or quality to be inferred" (Rohrbaugh, 1979). In an attempt to explain this concept, Rohrbaugh offers the following example:

Judging the number of beans in a bottle is a task with very little intentional depth, since there are only a few proximal variables in the task (e.g., the size of the bottle and the size of the beans), and each variable is highly correlated with the actual amount to be judged. In contrast, judging which presidential contender is most likely to win his party's nomination is a task with great intentional depth because of the numerous variables involved, each of which is only somewhat reliable (probabilistically) and indirectly related to a contender's likelihood of success. (p. 74)

The process by which pieces of information are integrated into a single judgment is often referred to as an individual's judgment policy (McCartt, 1983). She maintains there are two basic approaches to discover a person's judgment policy:

The first is to elicit a description of the policy directly from the person. While this is the most commonly used method, an accurate description cannot be obtained until an individual is fully aware of what are typically, very complex intuitive processes. The second method, embodied in Social Judgment Analysis, to infer the policy through an empirical analysis of actual judgments. (p. 346)
Social Judgment Theory. Social Judgment Theory (SJT) has emerged as a powerful tool for the study of decision-making and policy formation in various contexts (Hammond, Rohbaugh, Mumpower, & Adelman, 1977). Hammond, Stewart, Brehmer, and Steinmann (1975) have identified a number of examples of the application of SJT: citizen participation (Stewart & Gelberd, 1972); determining policies about community goals (Steinmann & Stewart, 1973); water resource planning (Flack & Summers, 1971); and corporate policy formation (Adelman, Stewart, & Hammond, 1975). Other applications include tenure decisions for university librarians (McCartt, 1983) and teacher's expectations of student reading education (Cooksey, Freebody, & Davidson, 1986).

Social Judgment Theory is based on the theory of probabilistic functionalism developed by psychologist Egon Brunswik (1955) and is pictorially represented by the "lens model" illustrated in Figure 1 (Adelman, Stewart, & Hammond, 1975). The lens model represents the relationship between a perceiver (or judge) and the objects of perception (or judgment) as mediated by cues whose relationship to both the perceiver and the object is probabilistic (Schulman & Elstein, 1975). They maintain "we do not see an object itself; we see it only through a set of cues, some associated with the object from one perspective, others from a different perspective" (p. 25).
Social judgment theorists point to a zone of ambiguity in the judgment task, that is, "the conceptual space between which can be observed and that which must be inferred because it cannot be observed" (Hammond et al., 1977, p. 3). They continue:

The lens model assumes that individuals rarely have direct access to the depth variable (i.e., the variable judged) that they must judge. Instead, the environment gives rise to a number of surface variables (i.e., cues) of imperfect reliability and validity upon which they must base their inferences. The zone of ambiguity thus lies between the surface variables and the depth variable. (p. 3)

Understanding the functioning of cues is crucial to understanding lens theory (Heald, 1991). He writes:

According to the theory's construct of "parallel concepts," both the decision maker's judgment system and the criterion system must be able to be described in terms of the same elements; that
is, the cues available to the subject making the judgment must be parallel with ones that influence the criterion. For example, if a college admissions counselor were trying to judge which from among many applicants were likely to make the best students, she or he might have available at judgment time certain cues including information including IQ, high school GPA, and SAT scores. Those same cues are known to have a measurable relationship to college students' actual success as witnessed by many correlational studies which have shown the associations. Thus the elements are parallel in that the same cues influence both the judgment of the decider and the success criterion. (p. 348)

Cooksey, Freebody, and Davidson (1986) maintain that different cues have different degrees of relationship or correlation with the actual, or ecological, criterion being judged. They describe the process:

Thus we say the cues have differing ecological validities. Some cues are more highly correlated with the criterion than others, while certain other cues may be totally unrelated thus carrying zero weight. This merely reflects the fact that the (observer) is operating in an uncertain environment -- that is, no single cue or even set of cues will perfectly predict the criterion. (p. 46)

According to Cooksey and Freebody (1986), SJT "assumes that policymaker at any level is, at best, uncertain in terms of how the available cues relate to or are indicators of final policy outcomes. The decision context is ambiguous with respect to which cues should receive greater emphasis in the policy; how the cues should best be integrated and synthesized and how valid the cues are for
the particular policy under consideration" (p. 19).

According to social judgment theory, the inability to resolve priority differences can be attributed to the task with which the policymakers must cope. Policymakers are often faced "with a situation in which they must integrate information from several factors, sources, or dimensions -- all of which may be more or less interdependent and more or less unreliable -- although the precise degree, of interdependence and unreliability may be unknown or even unknowable (Adelman et al., 1975, p. 138).

**SJT Procedures.** The implementation procedures for an SJT analysis of policy formation are straightforward and generally involve the following stages (Cooksey & Freebody, 1986). They explain:

First, the researcher compiles a series of profiles on representative persons or situations that vary in their relative positions on selected cue variables. Information concerning potential cues can be obtained from past research, interviews, and observations of people who have had experience in the policy formation being investigated, and through discussion with acknowledged experts in the area.

Once the profiles are completed, they can be presented to the policy makers, one at a time, for consideration and judgment. The task can be carried out using paper-and-pencil profile materials and response sheets. (p. 21)

Social Judgment Analysis provides a means to
empirically derive descriptions of judgment policies, thereby revealing interpersonal similarities and differences. Quantitative procedures have been developed to provide externalization of judgment policies (McCartt, 1983). McCartt describes this process:

Based on repeated judgments under a variety of well-specified conditions, an individual's judgment policy can be captured mathematically through the use of multiple regression procedures. The criterion variable is the individual's judgment, and the predictor variables are the dimensions of the situation judged. The regression equation provides the organizing principle, as well as the weights and function form for each dimension of the problem. (p. 347)

Both Brunswik and Hammond argue for the study of judgment in real situations (Schulman & Elstein, 1975). To illustrate how SJT functions in a real setting, a study was recently conducted at the State University of New York at Albany (McCartt, 1986). Central to the study was the identification of and specification of tenure criteria. Based on discussions with the library staff, five important and discriminating candidate characteristics were chosen. The identified criteria were:

1. Job performance
2. Educational credentials
3. Participation in professional or scholarly organizations
4. Research and publication record
5. University service (p. 348)

Once these major factors affecting tenure judgments were identified, profiles were constructed which were representative of the potential candidates. For the overall tenure judgment, 37 candidate profiles were presented to judges. For each judgment task, the judges were asked to assign a number between 1 and 20 to each candidate profile, where 20 represented a superior rating.

Description of judgment policies for each individual were derived using a multiple regression model. For each task, the regression analysis identified the weight and functions form relating each candidate characteristic to the appropriate rating assigned. Once the individual policies were delineated, it was possible to compare the policies of the participants and to develop a system for evaluating future tenure candidates.
CHAPTER 2

METHODOLOGY

The problem of this study was to determine the importance placed by registered voters of Southwest Montana on selected education indicators when judging the perceived quality of their local school system. This chapter explains the procedures to be followed in the investigation. The procedures of the study are presented in the following order:

1. Population description and sampling procedure
2. Research hypothesis
3. Explanation of investigative categories
4. Methods of data collection
5. Analysis of data
6. Limitation and delimitations

Population Description and Sampling Procedures

The population of this study consisted of the registered voters of Gallatin, Broadwater, Beaverhead, Silver Bow, Madison, Deer Lodge, Jefferson, and Powell counties (a.k.a. Southwest Montana). A list of the communities located in each of the counties was generated then categorized according to the athletic classification schedule designed by the
Montana High School Association. The categorization process resulted in the following classification schedule:

<table>
<thead>
<tr>
<th>Classification</th>
<th>School District</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Bozeman Butte</td>
</tr>
<tr>
<td>A</td>
<td>Anaconda Belgrade Dillon</td>
</tr>
<tr>
<td>B</td>
<td>Boulder Deer Lodge Manhattan Three Forks Townsend Whitehall</td>
</tr>
<tr>
<td>C</td>
<td>Ennis' Harrison Lima Twin Bridges Willow Creek Sheridan West Yellowstone</td>
</tr>
</tbody>
</table>

One school district from each classification was randomly selected to represent the sample population; those districts selected were Bozeman (AA), Dillon (A), Townsend (B), and Ennis (C).

Due to the fact that the registered voters residing in the Bozeman School District represented about 74.9% of the total population, 74.9% of the sample population was represented by registered voters residing in the Bozeman School District. In turn, the Dillon School District represented approximately 12.7% of the total sample, Townsend 7.7%, and Ennis 4.7%.

To ensure the sample population represented the proportion of registered voters, a proportional stratified random sampling technique was used. Ferguson and Takane (1989) describe a proportional stratified random sample:
If the members are drawn such that the proportions in the various strata in the sample are the same as the proportions in those strata in the population, the sample is a proportional stratified sample. For example, a university may have 10,000 students, of which 7,000 are males and 3,000 are females. A sample of 100 students is required. We may draw 70 males by a random method from the subpopulation, or stratum, of males, and 30 females from the subpopulation, or stratum, of females. Such a sample is a proportional stratified sample (p. 147).

In order to choose an appropriate sample size for the study, a statistical method had to be utilized if the entire population was not going to be included in this study. The sampling technique used for the study by this researcher was based on the work of Krejcie and Morgan (1970). Their work is based on a formula developed by the National Education Association (1969, as cited by Krejcie & Morgan). The total number of registered voters in the selected school districts eligible for a June 16, 1993, statewide tax referendum was 26,984 (Fenner, 1993). Applying Krejcie and Morgan's formula, the sample size for this study was 383.

A random sampling technique was used to select the sample. Random sampling techniques, according to Sudman (1983), are "easy and inexpensive for sample selection, data analysis, and sampling variance computation" (p. 163).

The basic principle that distinguishes probability sampling from the other types of sampling is
the condition that each element in the population is given a known nonzero probability of being selected into the sample. By adhering to this condition, the research assures that various techniques of statistical inference may be validly applied in the projection of sample results to larger populations (Fankel, 1983, p. 21).

In order to select a random sample of registered voters residing in the selected school districts, this researcher used the software program MSUSTAT to obtain computer-generated random numbers for each of the selected districts. (See Appendix A) These random numbers allowed each member of the population to have an equal probability of being selected.

In multiple regression the researcher is interested in developing a regression equation for the purpose of predicting a dependent variable from a set of predictors. If the equation does not predict well on other samples, then it is not fulfilling the purpose for which it was designed. According to Stevens (1986), "sample size (n) and the number of predictors (k) are two crucial factors which determine how well a given equation will cross-validate (i.e., generalize). In particular, the n/k ratio is crucial" (p. 58). He suggests that "about 15 subjects per indicator are needed for a reliable equation" (p. 58). Based on a return rate of 241 respondents and nine predictor variables, the n/k ratio of this study was approximately 27 to 1.
Research Hypotheses

Hypothesis One
There is no significant relationship between the perceptions registered voters of Southwest Montana hold for their local school systems and the set of variables Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, and Outputs.

Hypothesis Two
There is no significant relationship between the perceptions registered voters of Southwest Montana hold for their local school systems and the set of variables Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment.

Hypothesis Three
The independent variable, Inputs, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational attainment have been taken into account.

Hypothesis Four
The independent variable, Access to Knowledge, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.
Hypothesis Five
The independent variable, Press for Achievement, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of inputs, access to knowledge, professional teaching conditions, ideographics, outputs, gender, community size, and educational attainment have been taken into account.

Hypothesis Six
The independent variable, Professional Teaching Conditions, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.

Hypothesis Seven
The independent variable, Ideographics, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.

Hypothesis Eight
The independent variable, Outputs, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Con-
Hypothesis Nine

The independent variable, Gender, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Community Size, and Educational Attainment have been taken into account.

Hypothesis Ten

The independent variable, Community Size, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Educational Attainment have been taken into account.

Hypothesis Eleven

The independent variable, Educational Attainment, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school system after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Community Size have been taken into account.
Explanation of Investigative Categories

From the review of the literature, the researcher identified six investigative categories representing educational quality indicators determined to be important for this study. Next, the researcher identified five specific indicators from the literature for each of the six categories. The six categories and accompanying indicators included:

Indicator 1: Inputs
- District budgets
- Number of support personnel
- Textbooks and learning materials
- Buildings and equipment
- Per capita income

Indicator 2: Press for achievement
- Qualified teachers
- Focus on basic skills
- Tutoring programs
- Parental involvement
- Academic classes

Indicator 3: Access to knowledge
- Academic recognition
- Teachers' expectations
- Administrative support
- Students' academic focus
- Minimal instructional interference

Indicator 4: Professional teaching conditions
- Teachers' salaries and benefits
- Student/teacher ratios
- Teachers' preparation time
- Teacher empowerment
- Administrative support
Indicator 5: Ideographics
- Dependable and accurate employees
- Trustful employees
- Caring employees
- Helpful employees
- Prompt employees

Indicator 6: Outputs
- Student test scores
- Student drop out rate
- Student attendance rate
- Student promotion/retention rate
- Students attending college/vocational schools

Three additional independent variables were tested in an attempt to maximize the variability of the dependent variable, the perceptions of the sampled registered voters.

Indicator 7: Gender
- Female
- Male

Indicator 8: Community size
- Mid-sized city
- Small town
- Rural community

Indicator 9: Educational attainment
- Some elementary schooling
- Some high school
- High school graduate
- Some college
- College graduate

With respect to identifying community size, school districts were grouped by community size using a classification schedule developed by the National Center for Education Statistics (NCES) (1989). Using the NCES classification schedule, the research instrument identified mid-sized cities as those with greater than 25,000 (but less than
400,000; small towns represent a population center of less than 25,000 and more than 2,500; and rural communities represent a population of less than 2,500.

Methods of Data Collection

Data for this research project was collected by means of the instrument exhibited in Appendix A. This instrument was designed specifically for this study by this researcher.

As shown in Appendix B, the instrument was divided into three parts, each part requesting different kinds of data. Part I of the instrument requested the respondent to grade their local school system using the same grading scale teachers generally use to assess student performance: A, B, C, D, and F. This same question has been a part of the annual Gallup/Phi Delta Kappan Poll since 1974. Respondents were asked to circle the grade that best represents their perceptions of the quality of their local school system. The respondents' grades were later coded according to the following schedule:

\[ A = 4 \quad B = 3 \quad C = 2 \quad D = 1 \quad F = 0 \]

Part II of the instrument requested respondents to identify how important each of the listed quality indicators, the independent variables, were to their decision-making process as they assigned their letter grade. Mea-
surement of the independent variable involved the respondent's circling their choice from a five-point Likert-type scale:

1 = not important  
2 = of little importance  
3 = important  
4 = fairly important  
5 = very important

Likert scales are an extremely popular method for measuring attitudes (Oppenheim, 1966; Crano & Brewer, 1973; and Anderson, 1981). Researchers suggest "it is the most efficient and effective method for developing highly reliable scales" (Dwyer, 1993, p. 10). They are adaptable to a variety of situations and settings, and can be modified to assess a variety of affective characteristics (Anderson, 1981).

The Likert method employs "monotone items that are typically presented within a 'multiple choice' format" (Crano & Brewer, 1973, p. 239). The technique allows the participants to respond to each statement in terms of both direction (positive and negative) and intensity (strongly or slightly) (Anderson, 1981). Thus the range of the response makes it possible to get two types of information from the respondents.

On each item the respondent is asked to react to several degrees of agreement or disagreement. The available
response options usually include "strongly agree," "agree," "undecided" (or "not sure"), "disagree," and "strongly disagree." Modifications of those response options (such as "never," "seldom," "frequently," and "often") appear frequently (Anderson, 1981).

The response alternatives are weighted so that favorable statements carry the highest weight; for unfavorable statements, the scoring system is reversed (Edwards, 1957). The overall score is obtained by summing the weights for all items. Scoring for Part II of the research instrument was derived by adding the score of the Likert scale for each of the five indicators associated with the six indicator categories.

Part III of the research instrument requested the respondents to record their gender, the size of their community, and their educational attainment level. The researcher later coded the listed responses in Part III according to the following schedule:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community size</td>
<td>Mid-sized city</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Small town</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Rural community</td>
<td>1</td>
</tr>
<tr>
<td>Educational attainment</td>
<td>Some elementary schooling</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Some high school</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>High school graduate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>College graduate</td>
<td>5</td>
</tr>
</tbody>
</table>
The principles of instrument design and administration were guided by Dillman's Total Design Method (TDM) (1978). He describes the TDM process as follows:

The TDM consists of two parts. The first is to identify each aspect of the survey process that may affect either the quality or quantity of responses and to shape each of them in such a way that the best possible responses are obtained. The second is to organize the survey efforts so that the design intentions are carried out in complete detail. The first step is guided by a theoretical view about why people respond to questionnaires. It provides the rationale for deciding how each aspect, even the seemingly minute ones, should be shaped. The second step is guided by an administrative plan, the purpose of which is to ensure implementation of the survey in accordance with design intentions. The failure of surveys to produce satisfactory results occurs as often from poor administration as from poor design. (p. 12)

Since the task in survey research is "to obtain information from a sample of respondents about their (or someone else's) behavior and/or attitudes" (Bradburn, 1983, p. 290), a critical element of survey research is the response rate. Dillman predicts that by using the TDM for written questionnaires, "an average response rate of 77%" can be expected" (1983, p. 360).

The revised instrument (Appendix B), along with a cover letter (Appendix C) from the researcher, was sent to those randomly selected to participate in the study. A self-addressed, stamped envelope was enclosed with the survey to facilitate returns. If there was no response within
two weeks after the initial mailing date, a followup postcard (Appendix D) was sent to the participants who have not responded. If there was not any response four weeks from the initial mailing date, a followup letter (Appendix E) and a second copy of the research questionnaire was sent to the non-respondents asking them to participate in the study. If no response was received five weeks after the initial mailing date, the non-responding participant was considered a non-participant in this study.

Field Testing

The instrument was field tested by a panel of former school board members residing in a metropolitan area of the state. The instrument was revised in relation to appropriate comments received from the group. The panel was asked to assess the instrument according to factors identified by Gronlund (1983) that may lower the validity of the survey results:

1. Unclear directions.
2. Reading vocabulary and sentence structure too difficult.
3. Inappropriate level of difficulty of survey instruments.
4. Poorly constructed survey items.
5. Ambiguity.
6. Survey items inappropriate for the outcomes being measured.
7. Survey too short.
8. Improper arrangement of items.
Validity

Validity refers to the appropriateness of the interpretations made from test scores and other evaluation results, with regard to a particular use. According to Gronlund (1985), "validity is always concerned with the specific use of the results and the soundness of our proposed interpretations" (p. 55). Bohrnstedt (1983) defines validity as "the degree to which an instrument measures the construct under investigation" (p. 97).

Content validation typically takes place during test (or survey) development (Gronland, 1985). It is primarily a matter of preparing detailed survey specifications collected from the current literature and then constructing a survey that meets those specifications.

Bohrnstedt (1983) recommends the following steps in constructing a survey instrument:

First, the researcher should search the literature carefully to determine how various authors have used the concept which is to be measured. Second, researchers should rely on their own observations and insights and ask whether they yield additional facets to the construct under consideration. This is especially important should researchers have particular hunches as to how the concept relates to a (set of) dependent variables. (p. 99)

The items selected for the survey instrument was gleaned from a review of literature focusing on education
quality indicators. The researcher synthesized the findings of the literature review into a survey instrument that highlights the indicators most often identified by the authors.

The researcher included quality indicators found in the SERVQUAL instrument developed by Parasuraman, Zeithaml, and Berry (1988), in response to Bohrnstedt's claim that researchers may use "particular hunches as to how the concept relates to a (set of) dependent variables" (1983, p. 101). This researcher believed that the education quality indicators primarily focus on objective, cognitive data, omitting the affective side of an organization. The SERVQUAL indicators appear to fill this void.

Once content validity has been established, the researcher shifted his attention to predictive validity. Predictive validity can be considered a subset of criterion-related validity. Criterion-related validity is defined as "the correlation between a measure and some criterion variable of interest" (Bohrnstedt, 1982., p. 97).

Establishing the predictive validity of the quality indicators was the investigatory purpose of this research.

Many, perhaps most, uses of multiple regression have emphasized predictors from two or more independent variables, X, to a dependent variable. The results of multiple regression analysis fit well into a prediction framework (Kerlinger, 1987, p. 4)
Reliability refers to the consistency of measurement; that is, "how consistent test scores or other evaluations results are from one measurement to another (Gronlund, 1985). He continues:

Next to validity, reliability is the most important characteristic on evaluation results . . . Reliability (1) provides the consistency that makes validity possible and (2) indicates how much confidence we can place in our results (p. 860).

Bohrnstedt (1983) offers a second definition of reliability:

Reliability refers to the extent to which the variance of an observed X is due to random sources or to "noise." Therefore, reliability is defined as the ratio of variance in X due to non-random sources to the total variance (p. 73).

Because a person's response to a particular item or set of items may vary from occasion to occasion, errors of measurement will surface and therefore "depress the reliability of the items" (Bohrnstedt, 1983, p. 79). This depression takes place because the conditions under which evaluation data are obtained can never be identical. To compensate for this phenomenon, several methods of estimating reliability have been developed:

1. Test-retest method
2. Equivalent-forms method
3. Split-half method
4. Kuder-Richardson method
The methods are similar in that all of them involve correlating two sets of data, obtained either from the same evaluation instrument or from equivalent forms of the same procedure. The correlation coefficient used to determine reliability "is calculated and interpreted in the same manner as that used in determining the statistical estimates of validity" (Gronlund, 1985, p. 89).

Bohrnstedt (1983) maintains the most popular way to evaluate reliability has been to correlate respondents' responses at one point in time with their responses at some later point in time. Reliability, according to Bohrnstedt, is "evaluated by correlating a measure across time is called a measure of stability or, more commonly, test-re-test reliability" (1983, p. 79).

For this study, the reliability of the survey instrument was determined by using the test-retest methodology. Hopkins and Antes (1985) describe the test-retest procedure as:

Test-retest are useful to builders of standardized tests as they collect data to report about their tests. The correlation coefficient is calculated by obtaining two sets of scores for the same students through the administration of the same test on two different occasions (p. 275).

Shaw and Wright (1967) maintain that the test-retest "has the advantage of holding constant the items used, thus eliminating unreliability due to differences between items, which occur in the equivalent-forms method" (p. 16). They
suggest that the test-retest method "also has the advantage to requiring only a single scale; no additional forms are needed" (p. 16).

The researcher next decided on the time interval between the test and retest. Shaw and Wright (1967) state that an "ideal interval is unknown, but most investigators use intervals ranging from two to six weeks" (p. 17). Popham (1981) also recommends a time interval of two to six weeks, while Gay (1987) suggests one week.

After field testing, the survey instrument was administered to 15 members of a parent advisory committee of a local school district during a regularly scheduled meeting. The same form of the instrument was readministered to the same participants 16 days later. Each participant listed the last four digits of their social security number on the instrument, thereby enabling the participants to retain their anonymity.

Of interest in this comparison is whether or not the participants rated the independent variables in a consistent fashion from test to retest. Each of the participants rated each of the five indicators associated with the six categories. The researcher added the respondent's choices to produce a total score for each category. The initial category score was compared with the second category score to produce an r score.

The Pearson product-moment correlation coefficient was
used to determine the reliability of the survey instrument. The product-moment correlation is "a statistic descriptive of the magnitude of the relationship between two variables" (Ferguson & Takane, 1989, p. 123). Ferguson and Takane describe a correlation as follows:

Correlation coefficients are traditionally defined in such a way as to take values extending from -1 to +1. A negative value indicates a negative relation; that is, X increases and Y decreases. A positive value indicates a positive relation where X increases as Y increases. The symbol r is in common practice used to denote the sample value of the correlation coefficient (p. 123).

The Pearson product-moment correlation technique was selected since parametric data was used. Generally, according to Huck, Cormier, and Bounds (1974), "it is agreed that unless there is sufficient evidence to suggest that the population is extremely non-normal and that the variances are heterogeneous, parametric tests should be used because of their additional power" (p. 197). The Pearson product-moment test was used with this study, therefore, to demonstrate whether or not the test-retest data was correlated, thus "indicating to what degree, if any, the rankings of the survey instrument might be considered stable from one administration to another" (Huck et al., p. 197).

This phase of the research was also interested in discovering if the level of correlation reached the generally
accepted minimum level for reliability. As Gay (1987) has pointed out, reliability coefficients in the .90s are expected for most tests, though reliability in the low .70s is "acceptable for certain kinds of tests like personality measures and attitudinal scales" (p. 234). Anastasi (1976) concurs suggesting that correlation coefficients in the .70s may be acceptable for attitudinal scales. Since the survey instrument is an attitudinal scale, it was expected that the survey's independent variables should achieve a minimum correlation of .70 in order to be considered reliable. Table 1 reports the reliability findings of the test-retest procedure.

Table 1. Test-Retest Reliability

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>.7412</td>
<td>.7008</td>
<td>.4959(1)</td>
<td>.5135(2)</td>
<td>.6438</td>
<td>.9243</td>
</tr>
<tr>
<td>N</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Key
- Variable 1: Inputs
- Variable 2: Access to Knowledge
- Variable 3: Press for Achievement
- Variable 4: Professional Teaching Conditions
- Variable 5: Ideographics
- Variable 6: Outputs

Correlations above r = .5139 are significant at p < .05

Note: (1) removing outlier increased r to .8919
      (2) removing outlier increased r to .7941
The influence of the independent variables on the criterion variable was measured by the multiple regression statistical technique. According to Ferguson (1976), "a multiple regression analysis is a method analyzing the contributions of two or more independent variables to one dependent variable" (p. 465). Therefore, a Multiple Regression Analysis was used to test all the null hypotheses. Nine independent variables were used to increase the accuracy of prediction relative to the participants' perceptions of their local systems.

The software package MSUSTAT was used to perform the multiple regression analysis. The null hypotheses were tested at the 0.05 level of significance. When testing at the 0.05 level of significance, there are five chances in one hundred of rejecting a true null hypothesis. The decision making the level of significance was determined by analyzing the consequences of making a Type I or II error. The consequence of rejecting a true null (Type I error) is the possibility of concluding that there is a greater link between the independent variable and voter perceptions than actually exists.

The consequence of a Type II error (retaining a false null hypothesis) is the possibility of failing to recognize the important link between the independent variable and voter perceptions of their local school system. This Type
II error could in turn discourage school district officials from developing public relations strategies to enhance the public's perceptions of their local school system. Since the consequences of a Type II error were of more importance to this study, the level of significance was set at 0.05 rather than 0.01. This increased the likelihood of a Type I error, but reduced the chance of a Type II error (Ferguson, 1981).

Limitations and Delimitations

The following were limitations of this study:

1. Since it was not possible to employ all the educational quality indicators, the number of categories of indicators were limited to six.

2. The review of the literature for this study was limited to the personal resources of the researcher and the resources of the Renne Library at Montana State University including inter-library loans, ERIC computer searches, and Dissertation Abstracts.

3. The ERIC computer search was limited to the years 1982 to June 1993.

4. Respondents was mailed two followup requests to try to elicit a response.

The following were delimitations of this study:

1. The study's population was limited to registered voters of Southwest Montana.

2. The study was limited to data collection during the winter months 1994.
Scoring of all instruments was done by hand by the researcher and two assistants so the researcher had a clear picture of the data as it actually was recorded by the respondents. All reasonable precautions to ensure accuracy were taken by the researcher. This researcher and his assistants had checked both the recording of the items from the instruments to the computer and then again when the computer printout of the data was obtained.
Introduction

The problem of this study was to determine the importance placed by registered voters residing in Southwest Montana on selected education quality indicators and demographic indicators when determining the perceived quality of their local school system. The independent variables representing the educational quality indicators included (1) inputs, (2) access to knowledge, (3) press for achievement, (4) professional teaching conditions, (5) ideographics, and (6) outputs. Demographic indicators included (7) gender, (8) community size, and (9) educational attainment. The dependent variable of interest was the letter grade (i.e., A, B, C, D, and F) the respondents gave their local school system.

Description of Sample

A total of 383 registered voters residing in Southwest Montana was selected for the initial mailout for this study. These respondents resided in one of four school districts representing the four athletic classifications established by the Montana High School
Subjects for this study were selected using a stratified random sampling technique according to the number of registered voters residing in each district.

The data collection process involved two separate mailouts of the research instrument and an accompanying cover letter to each of the study's participants in addition to a postcard mailed to non-respondents two weeks after the initial mailing. A total of 241 respondents of the 383 originally contacted in the initial mailout participated in the study (representing a 62.9% response rate).

In analyzing the pattern of response, it was found that 40% (N=153) of the 383 participants responded to the initial mailout; 12% (N=46) responded to the second mailout; and 11% (N=42) responded to the third mailout. Table 2 illustrates the pattern of response according to the size of the community by which the sample was stratified. As illustrated, the response rate from each category of stratification held reasonably stable; consequently, the

<table>
<thead>
<tr>
<th>District</th>
<th>Number of Registered Voters</th>
<th>Percentage of Registered Voters</th>
<th>Sample Size</th>
<th>Number Returned</th>
<th>Percentage Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozeman</td>
<td>20,235</td>
<td>74.9%</td>
<td>287</td>
<td>175</td>
<td>61.0%</td>
</tr>
<tr>
<td>Dillon</td>
<td>3,417</td>
<td>12.7</td>
<td>49</td>
<td>32</td>
<td>65.3</td>
</tr>
<tr>
<td>Townsend</td>
<td>2,065</td>
<td>7.7</td>
<td>29</td>
<td>20</td>
<td>69.0</td>
</tr>
<tr>
<td>Ennis</td>
<td>1,267</td>
<td>4.7</td>
<td>18</td>
<td>14</td>
<td>77.8</td>
</tr>
<tr>
<td>Total</td>
<td>26,984</td>
<td>100.0%</td>
<td>383</td>
<td>241</td>
<td>62.9%</td>
</tr>
</tbody>
</table>
conclusion can be drawn that at least on community size, the respondent and non-respondent rates were similar.

Grading the Local Public Schools

Every Gallup/Phi Delta Kappa education poll since 1974 has asked Americans to rate their local school systems. Gallup participants were asked to grade their schools in the same way teachers grade the quality of their student's work (e.g., A, B, C, D, and F). Participants in this study were asked the same question. Table 3 reveals the results of the participants' responses.

Table 3. Participants' Ratings.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Bozeman</th>
<th>Dillon</th>
<th>Townsend</th>
<th>Ennis</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>29</td>
<td>12.0%</td>
</tr>
<tr>
<td>B</td>
<td>99</td>
<td>16</td>
<td>9</td>
<td>5</td>
<td>129</td>
<td>53.5</td>
</tr>
<tr>
<td>C</td>
<td>49</td>
<td>10</td>
<td>6</td>
<td>6</td>
<td>71</td>
<td>29.5</td>
</tr>
<tr>
<td>D</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>4.1</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Demographic Information

In addition to measuring the response rate of the selected sample members, the researcher asked respondents to respond to requests for demographic information in an attempt to further clarify the characteristics of the sample.
A substantial higher proportion of women than men participated in the study. Table 4 displays the male/female ratio of respondents with 37.8% male (91 subjects) and 62.2% female (150 subjects). This ratio does not correspond closely between the population (46.8% male and 53.2% female) and the sample.

Table 4. Demographic Data -- Gender

<table>
<thead>
<tr>
<th>District</th>
<th>Male</th>
<th>%</th>
<th>Female</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozeman</td>
<td>69</td>
<td>39.4</td>
<td>106</td>
<td>60.7</td>
<td>175</td>
</tr>
<tr>
<td>Dillon</td>
<td>10</td>
<td>31.3</td>
<td>22</td>
<td>68.7</td>
<td>32</td>
</tr>
<tr>
<td>Townsend</td>
<td>6</td>
<td>30.0</td>
<td>14</td>
<td>70.0</td>
<td>20</td>
</tr>
<tr>
<td>Ennis</td>
<td>6</td>
<td>42.9</td>
<td>8</td>
<td>57.1</td>
<td>14</td>
</tr>
<tr>
<td>TOTAL</td>
<td>91</td>
<td>37.8</td>
<td>150</td>
<td>62.2</td>
<td>241</td>
</tr>
</tbody>
</table>

The data on educational attainment connoted a well-educated group of respondents. It was found that 79% of the respondents reported having attended at least some college, while 3.7% reported that they had not completed high school. Table 5 indicates the educational attainment responses.

Correlation Matrix

Table 6 gives means, standard deviations, and a correlation matrix for the variables. Correlations among the independent variables had a mean value of .205 and a maximum value of .550. (See Appendix F)
Table 5. Demographic Data - Educational Attainment

<table>
<thead>
<tr>
<th>District</th>
<th>Some Elementary Schooling</th>
<th>Some High School</th>
<th>High School Graduate</th>
<th>Some College</th>
<th>College Graduate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozeman</td>
<td>0/0.0%</td>
<td>4/2.3%</td>
<td>23/13.1%</td>
<td>54/30.9%</td>
<td>94/53.7%</td>
<td>175</td>
</tr>
<tr>
<td>Dillon</td>
<td>0/0.0</td>
<td>2/6.3</td>
<td>6/18.8</td>
<td>9/28.1</td>
<td>15/46.9</td>
<td>32</td>
</tr>
<tr>
<td>Townsend</td>
<td>0/0.0</td>
<td>2/10.0</td>
<td>8/40.0</td>
<td>2/10.0</td>
<td>8/40.0</td>
<td>20</td>
</tr>
<tr>
<td>Ennis</td>
<td>0/0.0</td>
<td>1/7.1</td>
<td>5/35.7</td>
<td>1/7.1</td>
<td>7/50.0</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>0/0.0%</td>
<td>9/3.7%</td>
<td>42/17.4%</td>
<td>66/27.4%</td>
<td>0/0.0%</td>
<td>241</td>
</tr>
</tbody>
</table>

Multiple Regression Findings

In order to estimate the relationship between the perceptions registered voters hold for their school system and the combination of nine independent variables, a multiple regression analysis was conducted. The dependent or criterion variable, Y, represented the voters' perceptions of their local school systems. The independent variables for this multiple regression analysis were named as follows:

X₁ : Inputs
X₂ : Access to Knowledge
X₃ : Press for Achievement
X₄ : Professional Teaching Conditions
X₅ : Ideographics
Statistical Analysis of Hypotheses

In developing the regression model, the responses from the 241 participants were analyzed. The data reported in this chapter are arranged according to the listing of the 11 hypotheses stated in Chapter Two. The results of the statistical test of these hypotheses are presented in the remainder of this chapter. All hypotheses were tested at the .05 level of significance.

Hypothesis One

There is no significant relationship between the perceptions registered by voters of Southwest Montana hold for their school systems and the set of variables: inputs, access to knowledge, press for achievement, professional teaching conditions, ideographics, and outputs.

The first hypothesis tested whether the set of independent variables (i.e., educational quality indicators) explained a significant proportion of the variability of the dependent variable ($R^2 = 0$). The null hypothesis was rejected. The $R^2$ of .1016 is statistically significant at the .05 level of significance. The variables used in the study accounted for 10.16% of the variance in voters' perceptions. The coefficient of alienation ($1 - .1016$) equals...
98

.8984; this means that 89.84% of the variability of the participants' ratings cannot be explained by the listed variables. Table 6 displays the results of the ANOVA analysis for Hypothesis One.

Table 6. Multiple linear regression -- Hypothesis One

<table>
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ANALYSIS OF VARIANCE

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<td>4.41</td>
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<tr>
<td>Residual</td>
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<td>124.710</td>
<td>0.5329</td>
<td></td>
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<tr>
<td>Total</td>
<td>240</td>
<td>138.810</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis Two

There is no significant relationship between the perceptions registered voters of Southwest Montana hold for their local school systems and the set of variables Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment.

Hypothesis Two attempted to maximize the variability of the dependent variable by introducing three additional variables. While the resulting $R^2$ was statistically significant ($R^2 = .1088, p = .0014$), its practical significance is questionable since approximately 89.12% of the variability cannot be explained by the collective influence.
of all nine variables.

Table 7. Multiple Linear Regression -- Hypothesis Two.

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The predictive model created by Multiple Linear Regression for the sample population assumes the following form:

$$ Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9 x_9 $$

where

- $a = 1.646$
- $b_1 = 0.026 \ (t = 1.47, \ p = .1423)$
- $b_2 = -0.006 \ (t = -.28, \ p = .7832)$
- $b_3 = 0.001 \ (t = .08, \ p = .9401)$
- $b_4 = 0.055 \ (t = 3.33, \ p = .0009)$
- $b_5 = -0.011 \ (t = -.67, \ p = .5056)$
- $b_6 = 0.006 \ (t = .04, \ p = .9715)$
- $b_7 = 0.107 \ (t = 1.08, \ p = .2809)$
- $b_8 = -0.053 \ (t = -.88, \ p = .3762)$
- $b_9 = -0.029 \ (t = -.51, \ p = .6122)$
Hypothesis Three  The independent variable, Inputs, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local schools systems after the effects of Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Educational Attainment have been taken into account.

The second hypothesis tested whether the regression of voter perceptions (Y) on Inputs (X₃), after controlling the effects of Access to Knowledge (X₂), Press for Achievement (X₄), Professional Teaching Conditions (X₅), Ideographics (X₆), Outputs (X₇), Gender (X₈), Community Size (X₉), and Educational Attainment (X₁₀), was statistically significant. In effect, the researcher was asking whether b₃ = 0 (or b₂₃₄₅₆₇₈₉) is statistically significant.

To determine if b is statistically significant, the t value for X₃ must be tested. Kerlinger (1973) maintains that the interpretation of t ratios are "a bit complex" (p. 68). He explains:

These t tests, in other words, are tests of the b's, which are partial regression coefficients. They indicate the slope of the regression of Y on X₃, after controlling the effect of the other independent variables (p. 69).

The results of applying multiple regression techniques indicates that a significant statistical relationship does not exist between voter perceptions and Inputs after the effects of the remaining independent variables have been
taken into effect. Substantially, this means that Inputs does not contribute significantly to the prediction of voter perceptions after taking the remaining independent variables into account ($T = 1.47, p = .1423, \alpha = .05$). It also means that $b$ is not statistically significant ($b_i = 0$). Therefore, the null hypothesis was retained.

**Hypothesis Four**
The independent variable, Access to Knowledge, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.

The fourth hypothesis tested whether the regression of voter perceptions ($Y$) on Access to Knowledge after the effects of the remaining independent variables have been taken into account. In effect, the researcher was asking whether $b_z$ (or $b_{yz\ldots}$) is statistically significant.

Substantially, this means that Access to Knowledge does not contribute statistically to the prediction of voter perceptions after taking the remaining independent variables into account. The regression analysis reveals that the null hypothesis ($b_z = 0$) was retained ($t = -.28, p = .7832, \alpha = .05$).

**Hypothesis Five**
The independent variable, Press for Achievement, does not provide a sig-
nificant and unique contribution to the prediction registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Professional Teaching Conditions, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.

The null hypotheses ($b_1 = 0$) is retained ($t = .08$, $p = .9401$, alpha = .05). Press for Achievement does not contribute significantly to the prediction of voters' perceptions toward their local school systems after taking the remaining independent variables into account.

Hypothesis Six

The independent variable, Professional Teaching Conditions, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Ideographics, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.

The null hypothesis ($b_2 = 0$) is rejected ($t = 3.33$, $p = .0009$, alpha = .05). Professional Teaching Conditions contribute significantly to the prediction of voters' perceptions toward their local school systems after taking the remaining independent variables into account.

Hypothesis Seven

The independent variable, Ideographics, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of
Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Outputs, Gender, Community Size, and Educational Attainment have been taken into account.

The null hypothesis ($b = 0$) is retained ($t = -0.67, p = 0.5056, \alpha = 0.05$). Ideographics do not contribute significantly to the prediction of voters' perceptions toward their local school systems after taking the remaining independent variables into account.

Hypothesis Eight

The independent variable, Outputs, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Gender, Community Size, and Educational Attainment have been taken into account.

The null hypothesis ($b = 0$) is retained ($t = 0.04, p = 0.9715, \alpha = 0.05$). Educational Outputs do not contribute significantly to the prediction of voters' perceptions toward their local school systems after taking the remaining independent variables into account.

Hypothesis Nine

The independent variable, Gender, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local
school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Community Size, and Educational Attainment have been taken into account.

The null hypothesis \( (b_7 = 0) \) is retained \( (t = 1.08, p = .2809, \alpha = .05) \). The respondent's Gender does not contribute significantly to the prediction of voters' perceptions toward their local school system after the effects of the remaining independent variables have been taken into account.

Hypothesis Ten The independent variable, Community Size, does not provide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school systems after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Educational attainment have been taken into account.

The null hypothesis \( (b_8 = 0) \) is retained \( (t = -.88, p = .3762, \alpha = .05) \). The size of the respondent's community does not contribute significantly to the prediction of voters' perceptions toward their local systems after the effects of the remaining independent variables have been taken into account.

Hypothesis Eleven The independent variable, Educational Attainment, does not pro-
vide a significant and unique contribution to the prediction of the perceptions registered voters of Southwest Montana hold for their local school system after the effects of Inputs, Access to Knowledge, Press for Achievement, Professional Teaching Conditions, Ideographics, Outputs, Gender, and Community Size have been taken into account.

The null hypothesis \( (b_s = 0) \) is retained (\( t = -.51, p = .6122, \alpha = .05 \)). The Educational Attainment level of the respondents does not contribute significantly to the prediction of voters' perceptions toward their local school system after the effects of the remaining independent variables have been taken into account.

**Summary of Major Findings**

An analysis of the data revealed the following findings in relation to the responses provided by the sample of registered voters residing in Southwest Montana:

1. Hypothesis One was rejected, significant at the .05 level. The collective influence of the six independent variables on the dependent variable \( (R = .1016) \) was statistically significant at an alpha level of .05. The coefficient of determination was .1016, meaning that 10.16% of the variability of the dependent or criterion variable can be explained by
the collective influence of the independent or predictor variables. In contrast, the coefficient of alienation \((1 - .1088)\) equaled \(.8912\), meaning that \(89.12\%\) of the variability of the criterion variable could not be explained by the collective influence of the predictor variables.

2. Hypothesis Two was also rejected, significant at the \(.05\) level. The collective influence of the nine independent variables could explain approximately \(10.88\%\) of the variability of the dependent variable \((R^2 = .1088)\). While the coefficient of determination was \(.1088\), the coefficient of alienation was \(.8912\), meaning that \(89.12\%\) of the variance of the dependent variable could not be explained by the influence of the nine variables.

3. Hypothesis five was rejected at the \(.05\) level of significance. Of the six predictor variables (i.e., quality educator indicators), only one, Professional Teaching Conditions, significantly contributed to the prediction of voter perceptions after taking the influence of the other indicators into account.

4. Hypotheses two, three, four, and six were retained at the \(.05\) level of significance. None
of the quality education indicators associated with these hypotheses significantly contributed to the prediction of voter perceptions after the influence of the others indicators were taken into account.

5. Hypotheses eight, nine, and ten were also retained. None of the potential demographic indicators contributed significantly to the prediction of voter perceptions after the influence of the other indicators were taken into account.
CHAPTER 4

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter incorporates a brief summary of the study, conclusions, and recommendations for further research based upon the data gathered during the study.

Summary

Consistently, during the past two decades, the majority of U.S. Citizens and political pundits have maintained a low satisfaction rating with the nation's schools. A small number of these individuals had not been willing to rate the nation's schools as excellent or effective. The focus of this study was directed, primarily, toward citizen ratings of their local school system. More specifically, the study was designed and conducted in order to determine if the perceptions citizens hold for their local school systems are related in certain quality education indicators. Because the indicators used in this study are, in a large degree, variables over which school officials have a great deal of influence and control, it was important to know whether or not these variables are related to
citizen's perceptions of a quality school system, especially in light of the fact that a substantial portion of the necessary fiscal support for Montana schools is a direct function of voter (i.e., citizen) approval.

The study began with an extensive review of the literature summarized in Chapter I. The topics reviewed included (1) Quality, (2) Education Quality Indicators, and (3) Social Judgment Theory. The review found no evidence of any study attempting to link citizen perception of quality school systems and selected quality education indicators identified by researchers. This particular finding served as a catalyst for the researcher of this study to investigate and design a study to discover if there was a relationship between what researchers suggest to be important quality indicators and the perceptions of a sample of Montana citizens.

The research instrument was developed specifically for use in this study. The instrument represents a thorough search and synthesis of the research associated with the latest research on education quality indicators. The instrument contained 30 Likert-type questions to provide the data necessary to determine the degree of correlation between the perceptions of registered voters toward quality school systems and selected quality education indicators.

Nearly 400 registered voters residing in Southwest Montana were solicited to participate in the survey.
Participants were asked to identify how important each of the specified quality indicators were to them when they were asked to evaluate their local school system. Participants were asked to grade their schools using the same grading scale many school systems use to assess the work of their students (e.g., A, B, C, D, and F). Participants were also asked to supply certain demographic information. The participants' responses were analyzed using multiple regression techniques in an attempt to determine with some statistical validity the collective and separate influence of the listed indicators.

The education quality indicators, or predictor variables, identified for use in this study included:

1) Inputs
2) Access to knowledge
3) Press for achievement
4) Professional teaching conditions
5) Ideographics
6) Outputs

The demographic variables included:

7) Gender
8) Community size
9) Educational attainment

The dependent, or criterion, variables of interest were the letter grades respondents used to denote their perceptions of their local school system.
Data for the study was collected during the winter months of 1994. Each participant initially received a cover letter explaining the importance of the study and a copy of the research instrument. Those individuals who failed to respond to the initial mailing were sent a followup postcard reminding them to complete and return the research questionnaire. Those individuals failing to respond to the followup postcard were sent a second letter and a second copy of the research instrument. Those individuals not responding within two weeks of the third mailing were considered non-participants.

Conclusions

The overriding conclusion of this study reveals the problems associated with the development and implementation of a quality indicator system for local schools. While the study revealed a single indicator of statistical significance, it is safe to conclude that the indicators chosen for this study were of little practical use. This conclusion fits well with the fundamental question facing researchers today: "What indicators will be most valid and useful?" (Oakes, 1989, p. 181). Writing in an earlier article, Oakes further clarifies this debate by reminding us that "indicators should be generally valid and reliable statistics" (Oakes, 1986, p. 2). Fetler (1986) supports this position by arguing that indicators selected for use
should be judged on the "basis of their relevancy, objec-
tivity, and feasibility" (p. 33). Shavelson, et al. (1989) reports the need to develop "more valid and useful educa-
tional indicator systems."

A second conclusion may be derived from the analysis of hypotheses two through ten. None of the predictor vari-
ables provided any practical significance in the develop-
ment of a multiple regression equation. While individual indicators may have been validated as stand-alone indica-
tors during earlier research studies, the process of clus-
tering or combining the variables to enhance the predict-
ability of the regression equation was not productive. This research project appears to have entered into a new field of inquiry with respect to how educational indicators should be actually used. The literature review failed to expose whether or not the indicators could be used beyond comparing descriptive statistics. In retrospect, it now appears that the indicators identified by researchers were to be used for reporting purposes only, and that none of the researchers suggested blending the effects of the vari-
ables in collective manner.

Third, because the study failed to produce a practical regression equation, educational indicators should not be used as a means to evaluate a school district. The regres-
sion of the participants' perceptions (i.e., evaluation) of a set of educational indicators was decidedly an evaluative
exercise. Participants were asked to grade their local school system in the same manner as teachers evaluate the work of students (e.g., A, B, C, D, and F). The conclusion is in concert with Shavelson's (1989) argument:

The literature on social indicators appears to have reached consensus on what indicators cannot do. Social indicators cannot substitute for well-designed, in-depth program evaluation. They do not provide the level of rigor or detail necessary (p. 7).

Fourth, the descriptors associated with the category Professional Teaching Conditions produced the only predictor variable to reach a level of statistical significance. This finding may be surprising to a large number of researchers, including Richard Murane (1987) who maintains that the focus of a quality indicator system should "caution against moving beyond outcome indicators" (as cited by Oakes, 1989, p. 182). However, this conclusion parallels Oakes' (1989) contention that "society's definition of good schooling includes far more than results. Educators, parents, and policy makers should also worry about the quality of the experiences within the school" (p. 183). Shavelson (1989) sustains this conclusion by stating "in addition to monitoring outcomes, indicators should reflect the characteristics of students and communities served by schools, the financial and human resources (especially teachers) available to the schools . . . " (emphasis added) (p. 6).

And finally, participants in the study graded their
schools higher than individuals participating in the annual Gallup/Phi Delta Kappan poll (1992). Participants of this study gave their local schools a combination A-B grade 66 percent of the time compared with 40 percent of Gallup participants. Seventeen percent of the Gallup participants gave their schools a combination D-F grade compared with only four percent of the study's participants.

Recommendations

This section of the final chapter will offer recommendations for both the educational researcher and the in-the-field practitioner.

**Recommendations for Educational Researchers** Attempting to understand which quality indicators or cues people use to develop their perceptions of their local school systems should provide a basis for future research and evaluation. Primarily, the results of this study strongly suggest that future research be conducted to identify quality indicators of statistical and practical significance. The failure of this study to successfully identify useful quality indicators should encourage future researchers to investigate and identify additional indicators that would prove beneficial for the design and implementation of successful school quality enhancement campaigns by school officials.

With the narrow focus of the sample used here, the
most obvious future research effort should focus on replicating this work in other regions of this and other states. The scope of this research only surveyed the perceptions of registered voters of Southwest Montana, and should be expanded to include voters residing in other geographic regions of the state along with other states.

Future researchers may consider using fewer predictors when attempting to develop new regression equations. Lord and Novick (1968) explain:

Experience in psychology and in many other fields of application has shown that it is seldom worthwhile to include very many predictor variables in a regression equation, for the incremental validity of newer variables, after a certain point, is usually very low. This is true because tests tend to overlap in context and consequently the addition of a fifth or sixth test may add little that is new to the battery and still relevant to the criterion (as cited by Stevens, 1989, p. 66).

Finally, researchers should consider investigating the sources of information people use to assess their school systems and to measure the relative importance of each source. A number of respondents of this study added unsolicited comments that focused attention to the source(s) they used to develop their perceptions of their local schools. Two sources stood out: the writings of the local newspaper and the comments of students attending the local schools. Researchers should investigate the relative efficacy of the identified sources to assist school officials in
designing campaigns to enhance the perceptions of the local citizenry.

Recommendations for Local Practitioners  It may prove valuable for local school officials to conduct their own "action research" (Glickman, 1990, p. 393) projects to identify indicators that prove significant at both the statistical and practical levels. The results of such projects could prove to be valuable additions to a district's public relations campaign. Such a study could be in the form of a qualitative research project that would focus on interviewing strategies designed to identify and measure the relative importance of quality indicators in a localized setting.

Local practitioners should also conduct action research projects that deal with the sources of information used by patrons when formulating their assessments. Once again, gaining access to this type of information may prove beneficial for school officials attempting to design effective public relations campaigns.
REFERENCES CITED
References


Bracey, G.W. (1991). What can't they be like we were. *Phi Delta Kappa*, 73, 104-117.


APPENDICES
APPENDIX A

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APPENDIX B

SURVEY INSTRUMENT
"Indicators Affecting the Perceptions of the Quality of Montana Schools"

The purpose of this research project is to determine how a number of selected educational quality indicators or cues may affect a person's perception of his/her local school system. Quality indicators/cues have been used by an assortment of educational agencies to report how schools compare on a local and state-by-state basis. But no one has attempted to determine if these indicators play a role when citizens evaluate their local school system.

As a research participant, you will be asked to do three things. First, you will be asked to grade your local school system using the same grading system teachers use to grade their students (e.g., A, B, C, D, and F). Second, you will be asked to rate the importance of 30 educational quality cues you may have used when assigning your grade in Part One. And third, you will be asked to describe yourself through the use of demographic information.

It is estimated that the time needed to complete this questionnaire will range between 5 and 10 minutes.

*Please return this questionnaire by Friday, April 1, 1994.*

*THANK YOU FOR YOUR TIME AND COOPERATION!!*
SURVEY INSTRUMENT

Part I

Students are often given the grades A, B, C, D, and F to denote the quality of their work. Suppose your school system was graded the same way.

What grade would you give the school system in your community?

A B C D F

Part II

Listed on the next pages you will find a number of educational quality cues. Based on your experience with school systems, please think about how each of the listed cues may have influenced the grade you gave your local school system.

Please remember: There are no right or wrong answers. All we are interested in is how the listed cues might have influenced your perception of your local school system.

For each of the listed cues, please do the following:

1. READ each cue carefully.

2. Then DECIDE how important the listed cue is to you in relation to the way you graded your local school system.

3. DRAW A CIRCLE around the response that best indicates how important the cue is to you.

RESPONSE SCALE

1 = Not at all  2 = Of little importance  3 = Important

4 = Fairly Important  5 = Very Important
Cue One: Inputs

School inputs represent the critical human and financial resources contributing to the processes of education. Quality educational inputs include educational resources, fiscal maintenance, and community support.

How important were the following INPUT cues to you when you graded your local school system?

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<th>Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
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<td>How much money the district spends per student</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>2.</td>
<td>The number of support personnel (for example, counselors, reading specialists, and secretaries)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Up-to-date textbooks and learning materials</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>Modern buildings and up-to-date equipment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>The community’s personal income level</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Cue Two: Access to Knowledge

At schools with access to knowledge, students are provided with many opportunities to learn the district's curriculum. Basic resources such as time, programs, and staff are provided to bring students into contact with important concepts, processes, and skills.

How important were the following ACCESS TO KNOWLEDGE cues to you when you graded your local school system?

<table>
<thead>
<tr>
<th></th>
<th>Not Important</th>
<th>Of Little Importance</th>
<th>Important</th>
<th>Slight Importance</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Highly qualified teachers</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>An emphasis on basic skills</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Special tutoring programs for students</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Opportunities for parental involvement</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Rigorous academic classes</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cue Three: **Press for Achievement**

In school programs with strong press for achievement, both teachers and students take teaching and learning very seriously. They expect and value high achievement. When press is strong, students learn a rich and vigorous curriculum.

How important were the following PRESS FOR ACHIEVEMENT cues to you when you graded your local school system?

<table>
<thead>
<tr>
<th></th>
<th>Not important</th>
<th>Of little importance</th>
<th>Importent</th>
<th>Fully important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Schoolwide recognition for academic accomplishment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. The faculty's expectations about students' ability to learn</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Administrative support for a challenging curriculum and instruction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Students participating in challenging academic work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Minimum interference with instructional time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Cue Four: Professional Teaching Conditions

At schools with professional teaching conditions, teachers more often exhibit commitment and energy. They are permitted to teach well and willing to teach better. Staff turnover is likely to be low and stable, so schools can make and carry out long-range plans.

How important were the following PROFESSIONAL TEACHING CONDITIONS cues to you when you graded your local school system?

<table>
<thead>
<tr>
<th></th>
<th>Not important</th>
<th>Of little importance</th>
<th>Important</th>
<th>Fairly important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>High teachers' salaries and fringe benefits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>Low student/teacher ratios</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>Teachers are allowed time to participate in professional, non-teaching work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>Teacher participation in school-wide decision making</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>Administrative support for teaching staff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Cue Five: **Ideographics**

Ideographic indicators measure the personal characteristics of school employees. School districts with a strong ideographic focus make effort to hire and train employees to respond to the needs of students and citizens.

How important were the following IDEOGRAPHIC cues to you when graded your local school system?

<table>
<thead>
<tr>
<th></th>
<th>Not Important</th>
<th>Of little Importance</th>
<th>Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Employees perform promised services dependably and accurately</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>Employees convey a sense of trust and confidence</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>Employees provide caring individualized attention</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>Employees demonstrate a willingness to help students and citizens</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>Employees provide prompt service</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Cue Six: **Outputs**

Output cues deal with the performance of the educational system. School districts and state departments of education have traditionally used output cues to measure educational quality.

How important were the following OUTPUT cues to you when you graded your local school system?

<table>
<thead>
<tr>
<th></th>
<th>Not important</th>
<th>Quite important</th>
<th>Important</th>
<th>Fairly important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The results of student test scores
- The high school completion rate
- The students' daily attendance rate
- Student retention/promotion ratios (especially elementary students)
- The number of students attending college or vocational school after graduating from high school
Part III – Demographic Data

An important part of any survey research project is the statistical analysis of certain demographic information. Failing to complete this section will invalidate your answers in parts one and two.

Remember: Please be assured that the information you provide in this part of the survey instrument will be used for statistical purposes only. Your name will not be associated with this study or with any final report.

Please answer the following questions:

1. Are you: _____ Female
   _____ Male

2. Which of the following categories best describes your community:
   _____ Mid-sized city: a population greater than 20,000
   _____ Small town: a population less than 20,000 but greater than 2,500
   _____ Rural community: a population less than 2,500

3. Which of the following categories best describes your level of education:
   _____ Some elementary schooling
   _____ Some high school
   _____ High school graduate
   _____ Some college
   _____ College graduate

Please place this questionnaire (only) into the enclosed, self-addressed, stamped envelope, then mail by

Friday, April 1, 1994.

THANK YOU FOR YOUR TIME AND COOPERATION!!
APPENDIX C

CONTACT LETTER, INITIAL MAILOUT
Each year the Gallup Poll organization asks U.S. citizens to grade their local schools. If you were selected by Gallup to participate in their poll, how would you grade your local schools? Would you give your schools an 'A', or would you give them a lower grade? Another question they might ask you is which indicators or cues influenced the grade you gave your local schools? That is what this research project is about: To identify what grade Montana citizens would give their local schools and to determine how selected indicators or cues might influence their grade.

You are one of 500 Montana citizens selected to participate in this study. Your name was drawn from a random sample of citizens residing in Southwest Montana. In order for the results to truly represent the thinking of the people of the region, it is important that each questionnaire be completed and returned.

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This number is used so that we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire, nor will it be associated with any of the reported results.

Because policy makers need to understand what the citizens of our state believe are the important indicators of a quality education, information gathered from this research will be made available to officials and representatives of school districts, state government, educational agencies, and interested citizens. You may receive a summary of results by writing "copy of results requested" on the back of the return envelope and printing your name and address below it. Please do not put this information on the questionnaire itself.

I would be most happy to answer any questions you might have. Feel free to write or call. My telephone number is 994-6984.

Thank you for your time and cooperation.

Sincerely,

Richard J. Hill
Project Director
APPENDIX D

POSTCARD FOLLOWUP
March 2, 1994

Last week a questionnaire from Montana State University seeking your opinion about your local schools was mailed to you. Your name was drawn in a random sample of registered voters residing in Southwest Montana.

If you have already completed and returned it to us, please accept our sincere thanks. If not, please do so today. Because it has been sent to only a small, but representative, sample of Montana residents, it is extremely important that yours also be included in the study if the results are to accurately represent the opinions of Montana residents.

Once again, thank you for participating in the study.

Rick Hill
Project Director
APPENDIX E

CONTACT LETTER, SECOND MAILOUT
About four weeks ago I wrote to you asking you to grade your local school system and then rate a number of cues or indicators you might have used to determine your grade. As of today we have not yet received your completed questionnaire.

Our research division has undertaken this study because of the belief that citizen opinions should be taken into account in the formation of public policies affecting the state’s public school system.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. Your name was drawn through a scientific sampling process in which registered voters in Southwest Montana had an equal chance of being selected. This means that only about one of every 125 registered voters in Southwest Montana are being asked to complete the questionnaire. In order for the results of this study to be truly representative of all registered voters of Southwest Montana, it is essential that each person in the sample return their questionnaire.

In the event that your original questionnaire has been misplaced, a replacement is enclosed. Please return your questionnaire by Friday, April 1, 1994.

Your cooperation is greatly appreciated.

Cordially,

Richard J. Hill
Project Director
APPENDIX F

CORRELATION MATRIX
<table>
<thead>
<tr>
<th>Variables</th>
<th>Means</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>17.1</td>
<td>3.29</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td>20.6</td>
<td>2.85</td>
<td>.363</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Press</td>
<td>19.8</td>
<td>3.72</td>
<td>.294</td>
<td>.550</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. Tchg.</td>
<td>18.2</td>
<td>3.86</td>
<td>.478</td>
<td>.348</td>
<td>.445</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideog.</td>
<td>21.2</td>
<td>3.83</td>
<td>.262</td>
<td>.447</td>
<td>.474</td>
<td>.477</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td>19.4</td>
<td>3.79</td>
<td>.331</td>
<td>.336</td>
<td>.402</td>
<td>.169</td>
<td>.472</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.38</td>
<td>.486</td>
<td>-.100</td>
<td>-.121</td>
<td>-.065</td>
<td>-.097</td>
<td>-.117</td>
<td>-.021</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>2.54</td>
<td>.707</td>
<td>-.018</td>
<td>.041</td>
<td>-.011</td>
<td>.101</td>
<td>-.025</td>
<td>-.042</td>
<td>.006</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Ed. Attain.</td>
<td>4.27</td>
<td>.878</td>
<td>-.028</td>
<td>-.012</td>
<td>.092</td>
<td>.189</td>
<td>-.075</td>
<td>-.155</td>
<td>.028</td>
<td>.183</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 6. Correlation Matrix