

August 12th, 1999

# Relationships Between the Degree of Restructuring in Western Washington Elementary Schools and the Results on Criterion Referenced 4th Grade Assessments for Reading, Mathematics, Writing, and Listening

Gary C. Newbill  
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Seattle Pacific University

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Assessments for Reading, Mathematics, Writing, and Listening

By

Gary C. Newbill, J.D.

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

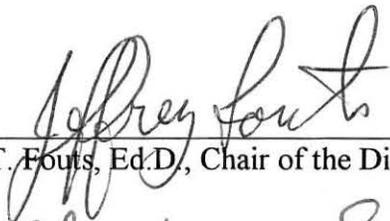
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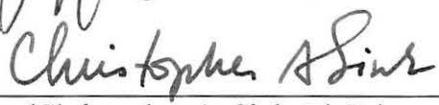
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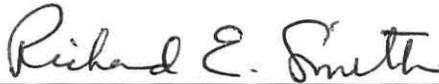
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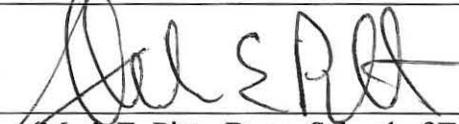
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Doctoral Dissertation

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Date

August 12, 1999

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Abstract

Relationships Between the Degree of Restructuring in Western Washington  
Elementary Schools and the Results on Criterion Referenced 4<sup>th</sup> Grade  
Assessments for Reading, Mathematics, Writing, and Listening

by Gary C. Newbill

Chair of the Dissertation Committee: Jeffrey T. Fouts, Ed.D., School of Education

The primary purpose of this study was to explore relationships between the degree of school restructuring in Western Washington elementary schools and results on criterion referenced tests for reading, writing, mathematics, and listening, administered to 4<sup>th</sup> grade students in 1997. The sample of convenience included 47 elementary schools from 4 Puget Sound counties.

The current study extended a larger project on educational reform conducted by 7 researchers under the direction of Professor J. T. Fouts. This research explored relationships between the degree of school restructuring, a construct developed through factor analysis of classroom teacher responses on the School Practices and Changes Questionnaire (SPCQ), and results on the 1997 Washington Assessment of Student Learning (WASL/4). Four scales— instructional enhancement, collaboration, fundamental change, and the composite score of these factors—measured the degree of school restructuring. The

percentage of students reaching performance benchmarks on the WASL/4 tests for reading, mathematics, writing, and listening described achievement.

Correlation and stepwise multiple linear regression procedures controlled for the over-lapping effects of demographic variables: SES, student body ethnicity, and enrollment; the 4 measures of restructuring; and achievement test results in 4 performance areas. With one exception, no statistically significant correlations were found between the degree of school restructuring and the demographic variables and between restructuring and WASL/4 results. SPSS calculated a single significant correlation between the degree of restructuring and student achievement, between instructional enhancement and reading ( $p < .01$ ), that may represent a chance finding more than it does a meaningful relationship.

Multiple linear regression analysis revealed that the socioeconomic status (SES) of the student body was the best predictor of achievement in reading ( $p < .001$ ), mathematics ( $p < .001$ ), writing ( $p < .001$ ), and listening ( $p < .01$ ), not the degree of school restructuring. Student body ethnicity added small increments to predictions on mathematics and listening, and enrollment added slightly to the performance prediction on mathematics.

Finally, it would appear that changes have occurred in all types of elementary schools, regardless of SES, student body ethnicity, enrollment, degree of school restructuring, or level of academic achievement.

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## ACKNOWLEDGEMENTS

This dissertation is dedicated to my wife Karen Newbill—master teacher and best friend—whose loyal support and encouragement sustained me throughout the research and writing process.

My heartfelt thanks go to research team members—Drs. Rob Van Slyke, Duane Baker, Clayton Mork, and Kathleen Coyne—all educational leaders, who shared generously their knowledge and time during development of the questionnaire and the collection of school-based data.

The help of key faculty and professional staff members was crucial to my success in the doctoral program. I especially appreciated the advice and guidance of Dr. Jeffrey Fouts, dissertation committee chair, and Dr. Carol Stuen, de facto mentor. Thank you, Drs. Richard Smith and David Steele, colleague professors of educational leadership, for accommodating my dual role as a doctoral candidate and full-time faculty member.

## CHAPTER 1

### Introduction

#### Purpose of the Study

The primary purpose of this study is to explore relationships between the degree of restructuring in Western Washington elementary schools and the results on criterion referenced tests administered in 1997 to 4<sup>th</sup> grade students in public schools. In this study I will focus specifically on the degree of elementary school restructuring and the assessment of student performance, which has been developed subsequent to enactment of House Bill 1209—the Education Reform Act of 1993 (Washington State Legislature, 1993). The 4<sup>th</sup> grade tests assess performance in areas identified by the Washington State Legislature as essential to academic success: reading, mathematics, writing, and the listening component of communications.

Relationships among the degree of elementary school restructuring, the 4<sup>th</sup> grade test results, and 3 other variables frequently considered in school research: the socioeconomic status of students, student ethnicity, and school size were also explored.

#### Background

During this century, public education at the common school level has received the attention of many reform-minded people. For varying philosophical or practical reasons these thinkers have proposed different and sometimes conflicting strategies for educating our children, including reliance on the status

quo (Adler et al., 1982, 1984; Bruner, 1966; Dewey, 1916). Scholars, practitioners, parents, union officials, business leaders, and politicians have propounded theories about curriculum, instruction, and school organization and operations. They have also prescribed various remedies for perceived ills (Deming, 1993; Gardner, 1991; Glasser, 1990; Glickman, 1998; Goodlad, 1984; Hirsch, 1987, 1996; National Commission on Excellence in Education, 1983; Owens, 1995; Sarason, 1990; Schlechty, 1997; Schmoker, 1996; Schmoker & Marzano, 1999; Sowell, 1993).

Throughout this extended dialog and debate the express goal of school reform and restructuring has been the improvement of instruction and, by necessary implication, the enhancement of learning (Newmann & Associates, 1996). As laudable as that goal has sounded, measured results and empirical evidence on the positive effects on student achievement have been mixed (American Institutes for Research, 1999; Berliner & Biddle, 1995; Tyack, D., & Cuban, L., 1995).

### The Crucial Question

After reviewing past and current efforts at educational change, a crucial question persists: Have school reforms and restructuring efforts made any meaningful difference in student achievement? Discovering credible evidence on that question for America's common schools is difficult, at best, because under the federal system of government, control over public education is decentralized. Each state operates independently. Without reviewing reform and restructuring

initiatives in each of the 50 states, the question simply cannot be answered for the country as a whole.

Recognizing and accepting this formidable limitation, the relationships between student achievement and the degree of restructuring experienced by elementary schools in Western Washington were explored more narrowly. To identify the degree of restructuring in sampled schools, researchers used a composite score of 3 factors or scales—collaboration, fundamental change, and instructional enhancement scales—which were derived from classroom teacher responses on the School Practices and Changes Questionnaire, “the SPCQ” (Fouts, 1999). For purposes of this study, the above-described composite score was termed the “Total Restructuring Score” (TRS). To define and measure student achievement, researchers used results on the 4<sup>th</sup> grade performance assessment mandated by the state: criterion-referenced tests in reading, mathematics, writing, and listening.

State level policy-makers desire positive results for the money they spend on common school education. Since the enactment of House Bill 1209 (1993) in Washington State, for example, legislative and educational authorities have insisted on measurable learning results. Shifting from norm referenced to standards-based thinking has required educators to identify and describe with more precision academic achievement goals for children in all grades and to design with intention specific strategies to reach those goals. At the local or implementing level, meanwhile, teachers and others appear to struggle as much

over the development of consensus on instructional strategies as they do over acceptance of the achievement goal: acquiring essential knowledge and skills.

### Washington State Response

Following the release of A Nation at Risk in 1983, a growing number of states, including Washington, have instituted studies of their own school systems and have required changes in curriculum, governance, accountability, teacher qualifications, staffing training, and/or the assessment of student learning (Lieberman, 1995; Lewis, 1989).

In the early 1990s the Washington State Legislature launched its own program to comprehensively reform public education, kindergarten through 12<sup>th</sup> grade. As amended, the Education Reform Act of 1993—popularly known as “HB 1209”—set the overall goal of a standards-based educational system by the year 2000. To that end, the Legislature established 4 learning goals covering a wide array of applied knowledge and skills, recognized by educators and generally familiar to the public. Goal 1, for example, called for *reading* with comprehension, *writing* with skill, and *communicating* effectively and responsibly in a variety of ways and settings. Goal 2 required students to know and apply core concepts in several subject areas, including *mathematics*. The act charged the Washington Commission on Student Learning (CSL) with the development of “clear, challenging academic standards; standards-based assessments and other ways of measuring student achievement; and an accountability system to hold

schools and school districts accountable for results” (Washington State Commission on Student Learning, 1997b, Overview).

In the spring of 1997, 270 Washington school districts participated voluntarily in the initial round of 4<sup>th</sup> grade criterion referenced testing, to assess student knowledge and skills in reading, writing, mathematics, and listening. Results indicated room for improvement. Forty-eight percent of the students met the reading standard, 42% met the benchmark in writing, 22% satisfied the mathematics standard, and 62% attained the mark on listening, a component of communications (Washington State Commission on Student Learning, 1997a). In subsequent years all 296 Washington school districts will be required to administer these tests to their 4<sup>th</sup> graders (Washington State Commission on Student Learning, 1998a).

#### Research Questions

The crucial question is whether school restructuring and student achievement are related. The following research questions address the primary and secondary purposes of this study. They explore the relationships between the degree of elementary school restructuring, the socioeconomic status of students, the ethnicity of students, the size of school enrollment, and the attainment of 4<sup>th</sup> grade students on the 1997 state assessments for reading, mathematics, writing, and listening.

1. What is the relationship between the degree of elementary school restructuring and the socioeconomic status of the student body?

2. What is the relationship between the degree of elementary school restructuring and the ethnic make-up of the school?
3. What is the relationship between the degree of elementary school restructuring and enrollment of the school?
4. What is the relationship between the degree to which an elementary school has been restructured and the attainment of its students on the new Washington State 4<sup>th</sup> grade assessments for reading, mathematics, writing, and the listening component of communications?
5. Which of these variables are the best predictors of student achievement: the degree of school restructuring, the socioeconomic status of the student body, student body ethnicity, or school size?

#### Significance of the Study

In a recent Seattle Pacific University study, Van Slyke (1998) found positive relationships between the degree of school restructuring and achievement gains on the Comprehensive Tests of Basic Skills (CTBS), a norm referenced measure of academic achievement. He reported "that more highly restructured elementary and middle schools correlated significantly with gains in student achievement for the period since reform legislation was enacted in 1993" (Abstract).

In this study the inquiry was expanded to criterion referenced measures of student achievement and to relationships between elementary school restructuring, achievement, and 3 other commonly studied variables school

research: socioeconomic status of the student body, student ethnicity, and school enrollment.

Van Slyke (1998) compared 1993 and 1997 CTBS scores, in order to draw inferences about the effects of school restructuring at elementary and middle levels. In this study a different indicator of student achievement was applied. The 1997 results on criterion referenced tests of knowledge and skills in reading, mathematics, writing, and listening at the 4<sup>th</sup> grade were used to explore relationships between the degree of school restructuring and student achievement at the elementary level.

Knowledge on school restructuring in Western Washington was extended by this study. Relationships between the degree of school restructuring and student performance on criterion referenced tests were explored, while controlling for the socioeconomic status of students, student ethnicity, and school size. An expanded baseline for future studies on the degree of school restructuring, as defined by the SPCQ, and student achievement, as measured by norm or criterion referenced assessments, was also provided.

## CHAPTER 2

### Review of the Literature

#### Introduction

Since the National Commission on Excellence in Education released A nation at risk: The imperative for educational reform (1983), expressions of concern about the effectiveness of America's public schools and proposals for change have mushroomed (Ellis & Fouts, 1994; Glickman, 1993; Fashola & Slavin, 1998; Stringfield, Ross, & Smith, 1996). Whenever student test scores appeared to decline or showed only modest improvement, the public has clamored for immediate explanations and for meaningful reforms, in order to ensure that students and graduates become and stay competitive in the global economy. Politicians and policy-makers at national, state, and local levels have responded with rhetoric, mandates, and money, in order to correct perceived inadequacies in the American system of common schools (Holland, 1997; Jones & Whitford, 1997; Lieberman, 1995; Washington State, HB 1209, 1993; U.S. Department of Education, 1991). Meanwhile, parents have looked for alternatives outside the traditional system of government schools. A viable and increasingly attractive home-based school movement, for example, has joined forces with its historic counterpart, sectarian and secular private education.

Crucial questions of direction and effectiveness persist, especially for public education. Have any of the many reforms or changes in school wide or classroom teaching practices improved student performance significantly? Do

any of the recent ideas for restructuring public schools exhibit potential for improved student learning? These questions will guide the review of literature by directing the scope of inquiry to more recent attempts at school reform, including efforts at school restructuring mandated by the Washington State Legislature. The review will focus on researched reforms and studies, particularly at the elementary school level, which exhibit objective evidence of student success, marginal performance, or failure. The placement of restructuring models and strategies along the success-failure continuum will depend, therefore, on an assessment of their relative effectiveness at improving student learning and skills.

In short, the review of literature will focus on research about recent initiatives to reform and restructure elementary schools, i.e., finding evidence on whether those initiatives have improved student learning and skills or shown promise for doing so in the future. The review will also touch on literature related to predictor variables in this study, namely, the socioeconomic status of students, student ethnicity, and school size by enrollment, and the degree of school restructuring.

#### The Term "Restructuring"

Though liberally used throughout the literature, the term "restructuring" denotes and connotes several meanings, depending on which components or operations of the school are involved in change. Murphy (1993) noted, "Although there appears to be no shortage of schools that have embraced restructuring throughout the nation and the world, there is still a good deal of confusion about

exactly what this construct means” (p. 2). He identified 4 strategies, which in his thinking best described fundamental changes in the educational system: “choice and voice, school-based management, teacher empowerment, and teaching for understanding” (p. 8). Murphy related these strategies to the redefinition of roles played by students, teachers, administrators, and parents, where these stakeholders share in the work of their school and where the enterprise becomes more learner-focused.

Other authorities have also struggled with definitions for the term “restructuring” and with applications of the concept. Sizer (1996), for instance, noted that schools borrowed the idea of restructuring from business, where it meant systemic reform, but lamented that many school systems have not instituted the kind of fundamental reforms suggested by the restructuring construct. For Sizer the term “systemic reform” described what many writers mean by restructuring. “Systemic reform stands for thinking of a new way to provide education, not merely fixing the system we have inherited” (p.48). For educators, including this writer, who are interested in school reforms with the promise or potential for enhanced learning, Sizer’s “systemic reform” idea holds strong appeal.

For purposes of this study, the meaning of restructuring comes much closer to the concept of systemic reform than to changes in practice which merely tinker with the system. In this vein, Ellis & Fouts (1996) provide a cogent and workable definition of restructuring.

Restructuring is a term that is currently in vogue, a catchall for a variety of reform efforts in schools. The term reflects the belief that American schools need drastic reformation in the most basic ways business is conducted [Emphasis added]. Current restructuring efforts in American schools generally involve some form of teacher empowerment, *site-based management*, curriculum alignment/reform, *choice*, *outcome-based education* and/or community and parental involvement. (p. 172)

Within the construct of restructuring, the term “drastic reformation” does not suggest change as an end unto itself. It suggests, instead, fundamental shifts in school organization and instructional strategy, which are intended to achieve measurable improvements in student learning and performance.

#### The Beginning of Restructuring

Authorities differ in their views about the beginning point of the current interest and activity in educational reform. Even the casual observer, however, will recognize that during the last 15 years—since the release of A Nation at Risk report—the pace of activity has increased markedly. It should be recalled that, prior to this threshold event, the debates and discussions, which centered on educational innovations, were no less lively. Proponents and opponents of one reform idea or another have, through their theories, research, publications, and pedagogy, championed complementary and competing values and goals (Bagley,

1928; Bestor, 1956; Bloom, 1956; Commission on the Reorganization of Secondary Education, 1918; Cohen, 1964; Counts, 1932; Cremin, 1957; Dewey, 1938; Rickover, 1959). The ideas and the educational movements, which their ideas have spawned or encouraged, formed the backdrop for the review of recent school reform and restructuring initiatives.

#### Reform and Restructuring Initiatives

Policy-makers, educators, business leaders, and parents are increasingly more interested in results. They ask pointed questions, which express varying degrees of dissatisfaction with public education. What educational models work for students? What approaches to teaching mathematics, reading, and written communication hold the best promise for improving my child's learning and skills? Key terms, such as achievement, outcomes, standards, benchmarks, the basics, essential academic learning requirements (Washington State Commission on Student Learning, 1998b), and performance-based education, hold popular appeal and attract scholarly attention (Fouts, 1999).

The impetus to reform education or restructure schools has sprung from a variety of sources: school building initiatives, local board decisions, state legislative mandates, and court orders. In the first judicial incursion of its kind, for example, the New Jersey Supreme Court in 1998 ordered "hundreds of urban schools to implement wholesale, schoolwide change by no later than next year [1999-2000]" (Hendrie, 1999, p. 1). Initially, the New Jersey Commissioner of Education required all 319 schools in the affected 28 urban districts to adopt

Success for All/Roots & Wings (Johns Hopkins University), because of research supporting the positive effects of those reform models on student achievement. That narrow direction was subsequently modified, primarily because the Roots & Wings component of the program was supported by fewer rigorous studies than Success for All. Other choices were authorized. The 55 elementary schools in the first year cohort were permitted to adopt Success for All/Roots & Wings or one of 4 other promising models: Community for Learning/Adaptive Learning Environments (Temple University), Comer School Development Program (Yale University), Modern Red Schoolhouse (Hudson Institute), or Accelerated Schools (Stanford University). Interestingly, among these 5 models only Success for All was rated strong in a recent review of 24 reform approaches (American Institutes for Research, 1999).

Major newspapers, like The Seattle Times (Houtz, 1997, 1998), not only announce test scores but also publish special reports about local school systems and individual schools, describing their programs and services and rating them on their test scores and other measurements of student success (Long, 1998). Radio talk shows, news broadcasts, and television features follow suit, particularly when legislators debate the education budget and when local boards of education place funding proposals on the ballot. The public and educators, moreover, voice concerns about students of all abilities, including the highly capable and low achievers.

### Tested Models in Title I Schools

Looking at the lower end of the achievement continuum, Fashola & Slavin (1998) reviewed the federal Title I program in the wake of a national evaluation, which had questioned the effectiveness of the remedial program (Puma, 1997). In order to help a greater number of disadvantaged elementary students, Congress in 1994 re-authorized Title I, permitting school wide projects, in addition to remedial programs for individual students. For school wide projects funded under Title I the authors recommended the adoption of established instructional models, which had demonstrated their effectiveness under the following achievement criteria.

A program was considered to be effective if evaluations compared students who participated in the program to similar students in matched comparison or control schools and found that the program participants performed significantly better on fair measures of academic performance.

(p. 371)

Also, the recommended instructional models must have been extensively used in Title I schools, be replicable on a broad scale, and show an effect size of 0.25, as determined through matched comparison or controlled studies. In other words, schools should adopt only those instructional models, which exhibit potential to yield positive learning results.

Fashola and Slavin (1998) reviewed 13 programs designed for use in grades K-6, K-8, and K-12, categorizing them into 2 groups: 6 school wide reform programs and 7 programs grouped with the New American Schools Designs. Three programs from the first group of school wide reforms met their evaluation criteria on achievement—Success for All (K-6), the Edison Project (primary grades), and the Consistent Management and Cooperative Discipline program (K-12). From the second group only 1 program met the evaluation criteria on achievement—Roots and Wings (K-6)—which the New American Schools had borrowed from Slavin's own Success for All program. The main point and recommendation of the article was straightforward: Use developed and demonstrably effective instructional models in Title I elementary schools, rather than invent new models. Notwithstanding the obvious interest of Slavin in his own programs, Success for All and Roots and Wings, his advice made sense for practitioners without the time or other resources to create programmatic changes for themselves.

Success for All (K-6). Success for All was used with at-risk elementary school populations to improve achievement in reading, writing, and language arts. The program required fundamental changes in instruction. The reading component, for example, featured individual student tutoring by teachers, rather than the traditional small group or full class models of instruction, sometimes assisted by paraprofessional employees. The changes yielded positive results. Slavin & Fashola (1998) reported longitudinal research at 23 schools revealing

“consistent, substantial positive effects of the program, averaging an effect size of about + 0.50 at each grade level. For the most at-risk students, those in the lowest 25% of their grades, effect sizes have averaged more than a full standard deviation (ES = +1.00 or more)” (p. 15). The authors pointed to similar results, which emerged from a study of 49 schools in Houston, Texas (Nunnery, et al., 1996), and from studies of special education pupils (Ross, Smith, Casey, & Slavin, 1995) and language minority students (Dianda & Flaherty, 1995; Slavin & Madden, 1995, April). In their book on the development, implementation, and evaluation of Success for All, Slavin, Madden, Dolan, & Wasik (1996) underscored program success at over 300 hundred schools in 24 states.

Edison Project. The second school-wide program, which Fashola & Slavin (1998) cited as effective, was the Edison Project. In this commercial attempt at educational reform in the primary grades, entrepreneurs borrowed heavily from other programs, including Success for All, the University of Chicago School Mathematics Project, and the Scholastic Company’s Science Place program (Slavin & Fashola, 1998). The Project overlaid on reading, writing, language arts, mathematics, and science curricula its own version of comprehensive restructuring, including a 205 day school year, lengthened school day, computers and software for students to take home, tutoring, and extensive performance assessment. Slavin and Fashola (1998) noted promising but very preliminary results in kindergarten and first grade reading achievement gains. “Edison kindergartners averaged .26 grade equivalents higher across four

measures (ES = +.68); the differences for first graders averaged .23 grade equivalents (ES = +.37). Second grade differences were non-significant” (p. 18). In a very recent report, profiling 24 approaches to school wide reform, however, the Edison Project was not even mentioned (American Institutes for Research, 1999).

Consistency Management and Cooperative Discipline. The third reform program: Consistency Management and Cooperative Discipline (CMCD) sought to achieve academic gains for inner-city students through improved organization of the school community. Fashola & Slavin (1998) explained, “CMCD emphasizes shared responsibility for classroom discipline between students and teachers, turning classrooms into communities of ownership in which teachers and students collaboratively arrive at the rules for classroom management” (pp. 374-375). The operative reform theory was fundamental, yet simple: Once the school setting is secure, learning can occur. For the 25 Texas schools, which adopted the program, extensive collaboration among teachers and students on discipline has yielded positive learning results. “The main evaluation of CMCD followed five CMCD and five matched control schools in Houston over a period of five years. This evaluation found significant positive effects on standardized achievement tests, especially for students who remained in the program for six years” (p. 375). Like the Edison Project, the Consistency Management and Cooperative Discipline program was not featured among the 24 approaches to

school-wide reform reviewed by the American Institutes for Research (1999) for 5 prominent education organizations.

Roots and Wings. The fourth and only other program meeting the achievement criteria suggested by Fashola & Slavin (1998) was Roots and Wings, which added mathematics, social studies, and science to Success for All. Roots and Wings contains 2 components. Math Wings is a constructivist approach to mathematics education, which “makes extensive use of cooperative learning, games, discovery, creative problem solving, manipulatives, and calculators” (p. 372). The second major component of Roots and Wings is WorldLab, which integrates social studies and science and employs simulations and group projects.

Although the research on Roots and Wings demonstrating positive effects on student achievement was limited to 2 studies, the American Institutes for Research (1999) considered the preliminary results encouraging. “Both rigorous studies present data from standardized tests (e.g., the Maryland State Performance Assessment Program, Texas Assessment of Academic Skills, and Tennessee Comprehensive Assessment Program) indicating that Roots and Wings helps improve student performance across all subjects test (i.e., reading, language, math, science, social studies)” (p. 107).

The 4 programs discussed by Fashola & Slavin (1998) focused on positive results: improved student performance. Although each program approached the achievement goal differently, 2 common themes emerged, which were important to this study. First, each program required concerted group effort, which could be

characterized in varying degrees as cooperative, broadly based, and/or collaborative. In the Consistency Management and Cooperative Discipline (CMCD) program, for example, students and their teachers took charge of classroom climate, collaborating fully on the development of management and conduct rules. The CMCD program also illustrated the second common theme among the 4 programs meeting the authors' achievement criteria: systemic or fundamental change. In CMDC the culture was radically altered, so that students and teachers could work in an environment conducive to learning. Fundamental changes were likewise evident in the other 3 programs: Success for All, featuring an individualized reading strategy; the Edison Project, invoking a modified school calendar and time schedule; and Roots and Wings, adopting a constructivist methodology for mathematics and integrating social studies and science.

#### Tested Approaches to School-wide Reform

Responding to public demand for improved student learning, while promoting their own goals for educational reform, practitioners have increasingly insisted on hard evidence of effectiveness, before they are willing to adopt sometimes costly innovations with potential for desired results: improved student achievement. Simply doing something or anything in the face of criticism has not satisfied community or educational interests. During the last dozen years, however, some programs have been shown to work relatively well, whereas others have failed to demonstrate positive effects on student achievement or have proven to be only marginally successful (American Institutes for Research, 1999).

The American Institutes for Research (AIR) profiled 24 approaches to school-wide reform, subjecting each innovation to rigorous scrutiny on the criterion of achievement effectiveness. The independent AIR review was jointly commissioned by the 5 professional organizations, which represent most school teachers and administrators in the United States: the American Association of School Administrators, American Federation of Teachers, National Association of Elementary School Principals, National Association of Secondary School Principals, and National Education Association. A number of major players in the policy and program development arena were, however, missing from the list of sponsors. Direct participation by research universities, the National Schools Boards Association and, perhaps, federal and state educational agencies would have added even more credibility to the AIR report.

The AIR report claimed, nevertheless, to be “the only guide that rates the [school-wide] approaches against a common set of high standards or compares them to one another in terms of scientifically reliable evidence” (p. 1). Reviewers evaluated the 24 programs under the following criteria:

1. They are promoted by their developers as a means to improve student achievement in low-performing schools.
2. They are mentioned by name in the federal legislation that created the Comprehensive School Reform Demonstration Program.
3. They are use in many schools and districts.

4. They have obtained national visibility in the education and popular press.
5. There is some research evidence about their effects on students and/or their implementation in schools. (p. 7).

Because of the overriding interest in improved student achievement, I looked more closely at approaches satisfying criteria 1 and 5—claims of improved achievement and quantitative evidence to support those claims—than at approaches receiving government approval or enjoying some measure of popularity, suggested by criteria 2 through 4.

The AIR reviewed studies reporting achievement effects, i.e., studies which recognized data from “standardized tests, including mandated statewide assessments; assessments embedded in a specific curriculum; teacher-designed assessment; reading inventories; and the National Assessment of Educational Progress” (p. 5). In rating the reform approaches other quantifiable data were considered, such as attendance, graduation rates, within-grade retention, and grades. According to AIR, “The final rating reflects the *amount* of rigorous research and the *strength of the findings* from that research” (p. 5).

In the end, only 3 of the 24 school-wide reform approaches earned the top rating of “strong” on evidence of positive effects on student achievement—Direct Instruction (K-6), High Schools That Work (9-12), and Success for All (PreK-6). Five other approaches received the “promising” rating—Community for Learning

(K-12), Core Knowledge (K-8), Different Ways of Knowing (K-7), Expeditionary Learning Outward Bound (K-12), and School Development Program (K-12).

These 8 highly rated school-wide reform approaches exhibit common characteristics, which will be identified and compared with the 2 themes observed in programs reviewed earlier by Fashola & Slavin (1998)—concerted group effort and systemic or fundamental change.

“Strong” rated school-wide reform approaches were required to evidence “[a]t least four studies (or two studies and one research review/meta-analysis) that used a rigorous methodology and show[ed] positive effects on student achievement.” Three of the studies had to report statistically or educationally significant results, “i.e., effect size of at least .25, statistically significant at the  $p < .01$  level, or gains greater than 10 percentiles.” Finally, no more than 20 percent of the studies that used rigorous methodologies could “show negative or no effects on students,” and at least one study had to report implementation of the approach (AIR, 1999, p. A-4). As previously noted, only 3 school-wide reforms satisfied the “strong” criteria for positive effects on student achievement: Direct Instruction (K-6), High Schools That Work (9-12), and Success for All (PreK-6).

Direct Instruction (K-6). Begun in the late 1960s by Siegfried Engelmann at the University of Illinois, *Direct Instruction (K-6)* featured carefully focused instruction intended to increase student achievement in reading, language, mathematics, social studies, physical science, handwriting, and the learning of facts. The program, which has been adopted in 150 schools, organized students

homogeneously by subjects and delivered interactive and precise lessons in small groups. Feedback was immediate and assessment was frequent, in order to monitor student progress and make needed adjustments. The AIR report noted 18 studies with positive effects on student achievement, including 4 quantitative studies from the 1990s.

The first study from the 1990s investigated 8 elementary schools at the 1<sup>st</sup> and 4<sup>th</sup> grades. Using t-tests, Wellington (1994) found that 4<sup>th</sup> grade Direct Instruction groups in mathematics outscored comparison groups on teacher designed instruments in 5 of 6 schools. In the same study 1<sup>st</sup> grade students with Direct Instruction outscored students in the comparison group of one school, whereas in another school the comparison groups prevailed over Direct Instruction students.

In the second study on achievement effects Grossen & Ewing (1994) compared the problem-solving skills of Direct Instruction (DI) students with students taught under National Council of Teachers of Mathematics (NCTM) standards. The researchers found no statistically significant difference between DI and NCTM students in 4 of 6 comparisons. They used F-tests to analyze results on several measures of performance: Woodcock-Johnson applications scale as a posttest, Iowa Test of Basic Skills (Concepts), Iowa Test of Basic Skills (Problem Solving), and the Inventory, 4<sup>th</sup> grade level of the Scott Foreman text as a pretest. Grossen & Ewing (1994) found, however, that DI students scored significantly higher than NCTM students on 2 other performance measurements:

an algebraic word problems posttest and the Iowa Test of Basic Skills (Operations).

Using F-tests to analyze Comprehensive Tests of Basic Skills (CTBS) results, Tarver & Jung (1995) found that Direct Instruction students in the 1<sup>st</sup> grade scored significantly higher on math computation and total mathematics than student receiving instruction through a discovery learning curriculum. They found, however, no significant difference on the concepts and applications components of the CTBS. In the 2<sup>nd</sup> grade DI students scored significantly higher on all 3 parts of the mathematics battery: computation, concepts, and applications.

Adams & Engelmann (1996) conducted the fourth quantitative research project from the 1990s, documenting achievement effects of Direct Instruction (K-6): a meta-analysis of studies involving groups of DI and comparison students. On overall achievement they found an impressive effect size (ES) of 0.97 with reading at  $ES = 0.69$ , mathematics at  $ES = 1.11$ , and language at  $ES = 0.49$ . The researchers discovered, however, that effect size (ES) varied by the type of test. When norm-referenced tests were used, for instance, the overall ES was 0.57, and criterion-referenced tests yielded an overall ES of 1.48. They also noted that the type of research design was reflected in overall ES. In causal comparative studies  $ES = 1.20$ , whereas, with experimental designs overall  $ES = 0.85$ . In the context of educational research, where an effect size of 0.25 is considered significant, the effective size differences by type of test and research design in the Adams and Englemann (1996) research were more interesting than important.

High Schools That Work (9-12). Though not bearing directly on the primary focus of this study—elementary school restructuring—the *High Schools That Work* program for grades 9-12 provided insights on themes held in common among elementary level reforms: group effort and systemic or fundamental change. Participation by all stakeholders, for example, was required at each of the 860 schools in 22 states, where the program had taken root. “The developer requires schools to establish a school advisory council composed of students, parents, teachers, community members, and business leaders to coordinate implementation of High Schools That Work” (American Institutes for Research, 1999, p. 77). The building principal, central office administrators, and vocational advisory groups were also deeply involved.

Considering the dominant organizational pattern of traditional American high schools, where departmentalization and college-prep versus vocational sentiments prevail, High Schools That Work represented a fundamental change in secondary education. In a concerted effort to raise the academic achievement of non-college bound students, the program integrated preparatory and vocational studies. High expectations, rigorous coursework, job-related learning opportunities, individual attention, extended learning experiences, assessment of student performance, and data-driven improvement decisions characterized High Schools That Work. Studies conducted by and for the developers reported statistically significant achievement gains, as measured by the National Assessment of Educational Progress (NAEP) and a test developed by the program

and based on the NAEP (Bottoms, et al., 1992; Bottoms & Mikos, 1995; Emanuel, et al., 1997). Other measures of achievement, e.g., completion of a college preparation or career program, advanced academic course completion, and the rate of academic course completion, reinforced positive achievement effects (Bottom & Mikos, 1995).

Success for All (PreK-6). Identified above as one of the most effective models of instruction implemented at Title I elementary schools, *Success for All* was the third of three school-wide reforms rated “strong” for evidence of positive effects on student achievement by the American Institutes for Research (1999). Developed by Robert Slavin and Nancy Madden of Johns Hopkins University, the program was established at its first school in 1987. Since that time, the program has been adopted by over 1,130 schools in 44 states and adapted for use in other countries. Designed and implemented as a highly structured curriculum for reading and language arts, *Success for All (PreK-6)* featured 90 minutes per day of reading instruction, grouping by performance for reading, continual formal and informal assessments, periodic regrouping of students, individual tutoring, cooperative learning, and a curriculum for writing. Restructuring extended beyond the classroom to include for each school a family support team: an administrator, parents, the full-time program facilitator, “and others such as social workers, counselors, attendance monitors, teachers and volunteers” (p. 118).

Eleven of 14 empirical studies from 1993 through 1997, which evaluated the effects on student achievement for *Success for All*, were conducted by and for

program developers. Any serious concerns about researcher objectivity and credibility were sufficiently mitigated, however, by study designs, which used valid and reliable instruments and matched controls or comparison schools. Three studies, one by the developers and two by independent investigators illustrated the strength of Success for All (PreK-6). Employing a matched controls design and using Wookcock Language Proficiency Battery and the Durrell Analysis of Reading Difficulty instruments, Madden, et al. (1993) found that program students in grades 1-3 scored higher than control group students on reading ability in 3 skills: word attack, oral reading, and letter-word recognition. Independent researchers Stringfield, et al. (1997), using a comparison design and the Comprehensive Tests of Basic Skills, found that students in well-implemented Success for All schools gained in reading more than students in national or matched samples of schools. Not all studies, it should be noted, placed Success for All in the winner's circle for every race. Results were mixed. Jones, Gottfredson, & Gottfredson (1997), for example, using standardized achievement tests, teacher achievement ratings, retention data, and a matched controls research design, found that control students in 1<sup>st</sup> grade reading achieved higher than program students on the Stanford Achievement Test. The same investigators, on the other hand, found that Success for All kindergarten students scored higher than the controls in language, as measured by the Metropolitan Readiness Test.

Five other promising approaches. Interested primarily in education reforms and restructuring approaches with hard evidence of positive effects on

student achievement, I adopted the American Institutes for Research (1999) rating scale. As previously noted, the Institutes ascribed a rating of “strong” to the 3 of 24 school reform approaches with the most convincing empirical and supporting evidence of positive effects: Direct Instruction (K-6), High Schools That Work (9-12), and Success for All (PreK-6). Reviewers added 5 other school reform approaches to the list of highly rated programs, which they labeled “promising.”

Placement on the second tier required 3 or more rigorous studies, 1 study with statistical or educational significance, and no more than 30 percent of the studies reporting negative or no effects on student achievement. Five approaches qualified under the criteria for “promising” reforms: the Community for Learning (K-12), Core Knowledge (K-8), Different Ways of Knowing (K-7), Expeditionary Learning Outward Bound (K-12), and School Development Program (K-12). Descriptions of each approach revealed that program implementation, in most cases, required concerted group effort and involved systemic or fundamental change, themes commonly observed in restructured school.

In the *Community for Learning*, adopted at 92 urban and rural schools, including 65 elementary schools, classroom instruction was intentionally coordinated with community services, in order to improve academic achievement and attain certain social development objectives. Participants in the program included students, parents, community agencies, teachers, a building facilitator, the district coordinator, and administrators. Key features of the instructional model included individualized learning plans, individual rate of progress,

criterion-referenced assessments, and adaptive instructional strategies. Whereas the independent study conducted by Brookhart, Casile, & McCown (1997) showed no significant differences in standardized tests for mathematics achievement, studies by Oates, Flores, & Weishew (1997) and Wang, Peverly, & Randolph (1984) showed both significant and non-significant gains in mathematics. The Oates, et al., and Wang, et al., studies also reported higher reading scores for program participants.

Introduced in schools in 1990, the *Core Knowledge* program had been implemented in 750 schools. Developers provided teachers with a 200-page outline, which sequenced precisely the knowledge-based curriculum by grade level (K-8) and subject: language arts, history, geography, music, mathematics, science, visual arts, and music but not foreign languages, physical education, or health. Highly prescribed, tightly sequenced, and cumulative, the curriculum was intended to take-up half of the available instructional time. Although very structured in curricular design, the program required minimal changes in school organization, focusing, instead, on the establishment of common planning time for teachers and on the coordination of subject matter coverage from grade to grade. Was adoption of this reform a fundamental change for the schools or merely a return to once traditional content? After all, teaching the Core Knowledge curriculum could be characterized as teaching “the basics.”

Three independent and rigorous studies showed effects on achievement for Core Knowledge. Stringfield & McHugh (1996) compared 6 program schools

with matched control schools. They found in the initial year of implementation that 1<sup>st</sup> and 3<sup>rd</sup> grade students gained more than the controls in reading comprehension and math concepts, when measure by the Comprehensive Tests of Basic Skills (CTBS). Two years later, the same researchers, using the Maryland State Performance Assessment Program, compared 3<sup>rd</sup> and 5<sup>th</sup> grade students in Core Knowledge schools with all Maryland schools on their achievement in 6 subjects: reading, math, social studies, science, writing, and language (Stringfield & McHugh, 1998). At the 3<sup>rd</sup> grade program students outscored Maryland students in all subjects, but at the 5<sup>th</sup> grade the Maryland students topped program students in half of the subjects: reading, science, and language. When Core Knowledge students were compared with matched controls, however, program students exceeded controls at both 3<sup>rd</sup> and 5<sup>th</sup> grades in all subjects but one: 5<sup>th</sup> grade science. In an Oklahoma study 3 Core Knowledge schools were compared with matched control schools on achievement in reading comprehension and language, measured by the Iowa Test of Basic Skills (Oklahoma City Public Schools, 1996). Researchers found that Core Knowledge students had higher, though not significantly higher, scores in reading comprehension for 3 years. In language program students also scored higher, significantly for 1 of the 3 years. Using a writing exercise, researchers found that students from 3 Core Knowledge “magnet” schools performed better than the comparisons, but that students from “non-magnet” schools not perform so well in writing as students from comparison schools.

In the next 2<sup>nd</sup> tier approach to school reform reported by the American Institutes for Research (1999), developers of *Different Ways of Knowing* proposed an interdisciplinary curriculum for K-7, which integrated the arts, mathematics, literature, technology, and science around history and social studies. Featuring high expectations, varied student activities, extended professional development, and parental involvement, the program was adopted at 412 schools in 7 states, including Washington. For some schools adoption of the Different Ways of Knowing program might not represent a fundamental change, because curriculum integration and staff development activities might be favored and practiced already. In other schools the extension of meaningful participation beyond students and teachers to include parents and the community would be a very different way of conducting business.

Three rigorous studies on student achievement revealed mixed, though largely positive, effects (Catterall, 1995; Catterall, Dreyfus, & DeJarnette, 1995; and Kentucky Department of Education, 1998). In one of the studies, for example, researchers used standardized tests to measure gains over 3 years in mathematics, language arts and social studies (Cattrell, et al., 1995). Employing analysis of covariance and F-tests, they found that student achievement in mathematics increased, but not significantly, for every year of the program and that students gained in language arts achievement by 8 percentile points, a significant gain. Comparing mean scores from the social studies test, researchers

observed that Different Ways of Knowing students bettered control students by 0.5 to 0.75 points on a 3.0 point scale.

The fourth promising program for reforming education, *Expeditionary Learning Outward Bound* for K-12 students, embodied fundamental changes and concerted group effort at the 65 schools in 13 states, which had adopted the approach since 1992 (American Institutes for Research, 1999).

Expeditionary Learning Outward Bound is a comprehensive school design that aims to transform curriculum, instruction, assessment, and school culture and organization [emphasis added]. It is based on two central themes: that students learn better by doing than by listening; and that developing character, high expectations, and a sense of community is as important as developing academic skills and knowledge. (p. 67)

“Learning expeditions”—extended projects of an interdisciplinary nature—formed the core of the curriculum and instruction. Expeditions incorporated field work and service projects and lasted from 10 to 16 weeks, culminating in student presentations and performance-based reviews of learning effectiveness. The approach required dedication to the practice of shared decision-making involving teachers, students, administrators, parents, staff members, and the community.

Three studies showed that implementation of the Expeditionary Learning Outward Bound (ELOB) program resulted in improved student achievement

(Academy for Educational Development, 1995; Expeditionary Learning, 1997; Farrell & Leibowitz, 1998). In the most recent study, conducted by Farrell & Leibowitz (1998), researchers compared test scores from 3 ELOB elementary schools with scores from other elementary schools in the district, using the Iowa Test of Basic Skills. The reading, math computation, and composite scores for ELOB students in Cohort 1 increased significantly. At one of the schools, for example, reading scores moved from the 27<sup>th</sup> to the 82<sup>nd</sup> percentile, contrasting boldly with results for other elementary schools in the district, which saw their reading scores decrease slightly from the 56<sup>th</sup> to the 52<sup>nd</sup> percentile. Researchers reported comparable achievement results for Cohort 2 students at the same 3 elementary schools. Whereas, for example, other district schools saw no change in reading, remaining at the 52<sup>nd</sup> percentile, Cohort 2 schools boasted some rather dramatic increases: 30<sup>th</sup> to 58<sup>th</sup>, 33<sup>rd</sup> to 62<sup>nd</sup>, and 77<sup>th</sup> to 90<sup>th</sup> percentile scores.

The final program with evidence of positive effects on student achievement began in 1968 at 2 Connecticut elementary schools. Subsequently adopted at 700 schools, the *School Development Program*, founded by child psychiatrist James Comer, focused heavily on relationships with adults and on personal and social growth. "The main goal of the program is to develop in students the personal, social, and moral strengths necessary to achieve success in schools" (American Institutes for Research, 1999, p. 110). In order to accomplish this laudable goal, schools were required to make fundamental changes in their organization and to operate under a complex and sophisticated consensus-building

model for decisions, which emphasized collaboration and no-fault problem solving. Collaborative group effort through teaming also distinguished this program from traditional schools. Teams included the School Planning and Management Team: teachers, parents, the principal, social workers, psychologists, secretaries, aides, and custodians; the Student and Staff Support Team: classroom teachers, psychologists, social workers, counselors, and special education teachers; and the Parent Team for communication and participation at school. The program, developed primarily for elementary schools, was designed to work with any curriculum.

Positive effects on student achievement were documented by rigorous studies (Becker & Hedges, 1992; Joyner, 1990; Stringfield, et al., 1997). Using the Comprehensive Tests of Basic Skills to measure reading and mathematics, Stringfield found that the average NCE scores for students in School Development Program (SDP) schools rose relative to the scores for students in a national sample of control schools. SDP students gained 19 NCE in reading and 22 NCE in mathematics. In another study reviewed by Becker & Hedges (1992) researchers, using the Iowa Test of Basic Skills and the MAT, reported higher math scores for SDP students than for the controls by  $\frac{1}{2}$  standardized or grade equivalent unit.

With the possible exception of Core Knowledge, considered a return to traditional education, the 8 highly-rated school reform approaches exhibited characteristics within 2 themes common to restructured schools—concerted group

effort: cooperative, broadly based, and/or collaborative activities and systemic or fundamental change in organization, curriculum, and/or instruction. Each reform program manifested in varying degrees the characteristics of these common themes. As previously noted and discussed, all programs produced positive effects on student achievement.

#### Restructuring Washington Schools: Mandates and Responses

In 1993 the Washington State Legislature launched educational reforms, which have called school stakeholders into action and which have established new academic standards and assessments to judge whether student are achieving as they should (Washington State Commission on Student Learning, 1997). State educational policy, moreover, has shifted fundamentally from norm-referenced analysis of academic progress to criterion-referenced assessment of specific learning goals or benchmarks. Concern over mastery of the “essential academic learning requirements” (EALRs) drives curriculum and instruction decisions in reading, writing, communication, mathematics, science, social studies, the arts, and health/fitness (Washington State Commission on Student Learning, 1998b).

In this redirected educational environment not only will students be held accountable for results, but also their schools and districts (WA State Legislature, 1997; Swift, 1998, October). Most recently, in an omnibus bill the 1999 Legislature established a program for school accountability and assistance under the direction of a newly created agency: the Academic Achievement and Accountability Commission (AAAC). Effective July 1, 1999, the AAAC

replaced the Washington State Commission on Student Learning (Washington State Legislature, 1999; Washington State School Directors' Association, 1999).

#### Standards and Assessments

The Washington State Legislature charged the Commission on Student Learning (CSL) with the duty to develop performance-based achievement standards in the several cognitive and skill domains identified by statute. In turn, the CSL enlisted more than 330 professional educators, principally from local districts, to staff the 8 subject matter advisory committees which crafted the EALRs (WA State CSL, 1998b). The committees defined the major components of each EALR and described the developmental indicators or benchmarks, used as the bases for the Washington Assessments of Student Learning (WASL). This strategy converted an otherwise top-down management exercise into one with significant grass-roots influence and participation, resulting in sets of broadly accepted performance standards. This state level exercise illustrated themes common to school studies showing positive effects in student achievement: concerted group effort and fundamental change.

It came as no surprise, when schools in each of the 296 school districts responded to the challenge of educational reform. They essentially had no choice in the matter. Administrators knew that, eventually, every elementary, middle level, and high school must assess annually the achievement of their respective 4<sup>th</sup>, 7<sup>th</sup>, and 10<sup>th</sup> grade students using the criterion-referenced, performance-based

assessments provided by the state. Although the initial round of testing was voluntary, 91% of the school districts stepped forward.

#### State Assessments: The First Round

In the spring of 1997, 270 school districts volunteered to test 4<sup>th</sup> graders using the newly developed Washington Assessment of Student Learning (WASL) for reading, writing, mathematics, and the listening component of communications. The results left much room for improvement. On the test for listening skills 62% of the students met the performance standard. On the remaining 3 tests, however, less than half of Washington's 4<sup>th</sup> grade students attained the established benchmark: reading 47.9%, writing 42.7%, and mathematics 21.4% (CSL, 1998a; Superintendent of Public Instruction, 1999). In the spring of 1998 all elementary schools were required to test 4<sup>th</sup> grade students. Results on the WASL were again lackluster: reading 55.6%, writing 36.7%, and mathematics 31.2%. Like the previous year, the proportion of students who satisfied the listening standard headed the list at 71.3% (Superintendent of Public Instruction, 1999).

Although it is too early to determine the level of statewide success with educational reform, as measured by results of the WASL over several years, there are sound indications that school restructuring relates to improved student performance. Van Slyke (1998) found, for example, that gains in CTBS scores between 1993 and 1997 were positively correlated with the degree of school restructuring. Following 1997 and 1998 administrations of the 4<sup>th</sup> grade WASL,

researchers at the Center on Reinventing Public Education, the University of Washington, surveyed statewide samples of elementary schools. Among other things, Lake, et al. (1999) found that focused, school wide changes were related to improvements in WASL results.

In general, schools that made significant gains in test scores took a proactive approach toward improvement. Principals and teachers assessed strengths and weaknesses, set a limited number of priorities, focused on improving instruction, and took the initiative to find the help the school needed. . . . All but one improving school had made a major change in its instructional program in the last few years. These changes were more than just a new textbook or a new module for a few days' instruction in one grade. They represented a significant philosophical shift in how teaching and learning take place at the school. (pp. 5 & 7)

In a brief analysis of national trends, an Education Week writer concurred, reporting that the success of whole-school or school-wide reforms depended on how completely the designs were implemented (Olson, 1999). Finally, in the current study the relationship between the degree of school restructuring and the performance of 4<sup>th</sup> grade students on the 1997 Washington Assessment of Student Learning (WASL) are further explored.

### Potential Predictors

Which of the following variables are the best predictors of student achievement—the degree of school restructuring, student body ethnicity, the socioeconomic status of the student body, or school size? Investigators, commentators, and practitioners raise questions or make statements about the influences these variables exert on student achievement. To the casual observer, minority status, low socioeconomic status, and poor grades appear related. The conventional wisdom, moreover, holds that race and wealth affect, if not determine, a student's success in school. Reported research and statistical analysis suggest some of the answers.

#### Ethnicity

Whenever public schools release student test results, analysts point to differences among groups, often comparing the achievement of white students with the scores of ethnic minorities. Educators, community members, and parents, for example, seem to accept as inevitable the relatively low achievement of black students and the relatively high achievement of Asian students. In the case of blacks Singham (1998) noted, "While the phenomenon itself is indisputable, there is no consensus on the causes, and favored explanations seem to depend on where one stands on the ideological spectrum" (p. 10). The ethnic gap in test performance is variously explained in terms of economic disparities, social pathologies, cultural differences, and even genetics. The presence of overt or subtle racism continues to cloud the issue of observed differences in

performance (Jarolimek & Foster, 1997). Whatever their theoretical or actual genesis, gaps in performance among racial groups are not inevitable.

In a study conducted with black and high-achieving, ethnic Chinese students in mathematics courses at the University of California at Berkeley, Treisman (1992) discovered that blacks most often studied alone, whereas the Chinese frequently studied together. He found that, when mathematics students were organized into workshops and working groups, which were mixed ethnically and by achievement record, the academic performance of blacks improved up to one letter grade in mathematics courses. Treisman's strategy suggested that grouping students heterogeneously for cooperative learning activities helped all students to perform relatively well and persuaded black students, in particular, to reject the self-fulfilling prophecy of low achievement, which ethnic stereotyping encourages.

Other educators question the efficacy of mixing students by race and abilities, at least as that strategy is applied to closing the gap in academic performance. Advocates of multicultural education, for instance, demand recognition of ethnic diversity throughout the system, manifested in adaptive curriculum, instruction, and assessment, which maintains group identities and perpetuates separation. Parks (1999) insists that "Multicultural education is the key curriculum reform in combating racism" (p. 16). She and other educators, who emphasize tolerance and accommodation of ethnic differences in the schools, seem to place more importance on social healing through education and the

maintenance of cultural distinctions within schools than they do on the academic achievement of minority and majority students. Yet, the concern over learning gaps among racial groups, as observed in Washington test results, appears justified by the data.

Results from the 1997 administration of the 4<sup>th</sup> grade Washington Assessments of Student Learning (WASL) showed much lower scores for non-white students, except Asian/Pacific Islander students, than for whites (Superintendent of Public Instruction, 1999). In reading, for example, 53.7% of white students met the WASL standard, compared to 23.6% of American Indian/Alaskan Natives students, 26.8% of Black/African Americans, and 19.9% of Hispanic students. Nearly half of Asian/Pacific Islander students (47.2%), on the other hand, attained the reading benchmark. Similar patterns in performance among ethnic groups emerged from the other 3 assessments in mathematics, listening, and writing with white and Asian/Pacific Island students leading other groups and competing for top positions.

In mathematics, for example, Asian/Pacific Islanders (24.5%) and whites (24.9%) were essentially equal in their performance; in listening skills the Asian/Pacific Islander group (56.2%) trailed their majority counterparts (67.5%); and in writing Asian/Pacific Islanders (50.9%) scored higher than whites (46.6%). Although results of the 1998 4<sup>th</sup> grade WASL showed overall improvement in reading, mathematics, and listening, scores also revealed a general decline in

writing and gaps in performance by ethnicity on all measures, similar to 1997 patterns (Superintendent of Public Instruction, 1999).

In the 2<sup>nd</sup> research question I ask, "What is the relationship between the degree of elementary school restructuring and the ethnic make-up of the school?" The question leads to a related inquiry. Is the degree of elementary school restructuring related positively to the performance of students on the WASL? Accepting the proposition that the ethnic identity of students does not determine learning ability or presuppose the level of academic performance, I anticipated no significant correlation between ethnicity and scores on the Washington Assessment of Student Learning (WASL/4) in more highly restructured elementary schools.

#### Socioeconomic Status

Groups of students are not only defined by their ethnicity but also by their relative wealth. The socioeconomic status of students, moreover, is related to academic success. Research shows a direct correlation between family income and test scores (Bracey, 1998; Jarolimek & Foster, 1997; Lake, et al., 1999; Locke, 1998; Mayer, 1997; Urban Issues Committee, et al., 1998). Summarizing the situation succinctly, Jarolimek and Foster (1997) stated: "Evidence that the largest number of educational casualties come from the lower social classes is overwhelming. These children come from environments that are educationally impoverished, and such an atmosphere conditions nearly every aspect of their lives" (p. 15). As asked with ethnicity, does socioeconomic status determine test

results? Perhaps not, but higher status in the community seems to afford some educational advantages.

Parents from the upper strata of society seem to focus almost entirely on their own children and show little interest in the educational progress of economic minorities. Although it would be unlawful to openly segregate students by socioeconomic status (SES) or ethnic identity, overtly integrated schools have accomplished that end through academic tracking, purportedly based not on wealth or race but on student ability and achievement record. Kohn (1998), however, found other factors than mere talent or grade point average contributing to this situation. He attributed much of the differential treatment by SES and/or race to the influence of parents with political pull: parents who succeeded in getting their children into the higher tracks at the expense of other children. Wells and Serna (1996) were even more pointed, when they charged that program assignments for the favored, like advanced placement courses, had less to do with merit than with parental power exerted to secure finite educational benefits at the expense of poorer students without effective advocates.

Not surprisingly, the government has reacted to a perceived need to mitigate the negative effects of student poverty on education. The U. S. Congress, for example, responded by appropriating funds for Title I elementary schools, based on the socioeconomic status of the student body. Entitlement to participate in the program was to be determined by the number of students at the school, who were eligible for free and reduced meals under the federally

subsidized school lunch program. This program for remedial instruction implemented a policy predicated on the proposition that poor students score lower on academic tests. Social scientists concurred with the proposition. Mayer (1997) found, of example, that “young children who live in the poorest 20 percent of households . . . score lower than the richest 20 percent of young children on all three measures of cognitive ability” (p. 43). Although evidence supported the proposition, current efforts at school reform and restructuring may be creating exceptions to the rule.

The Urban Studies Committee of the Washington State School Directors' Association et al. (1998), for example, studied 12 schools with over 50% of their students on the free and reduced lunch program and with scores on the Test of Early Years exceeding the state average. They found that “some schools are doing well despite having a preponderance of children from low income families; in other words, some schools are outperforming their demographics” (p.1). Through interviews with building principals and district superintendents researchers found that these schools had “focused their attention, time, energy and resources on improving student achievement” (p. 10).

Reporting on their study of performance-based test results in Washington schools, Lake, et al. (1999) noted:

Scores on state tests correlate highly with family income and other indicators of socioeconomic status, but that does not tell the whole story.

Children in some low-income schools did relatively well on the state tests, and children in some higher income schools did relatively poorly. Family income is an advantage for some schools and a problem for others, but it in itself does not cause student learning. . . . (S)chools can make a difference now. [Emphasis added]. (p. 5)

The performance of student groups, which include both minority and poor students, can improve. On this point Glickman (1998) commented optimistically about the interplay of ethnicity, class status, and student achievement, noting improvement in academic performance. "Minority students have made significant gains in narrowing the educational gaps between themselves and their white counterparts in the past decade (as measured by achievement scores, high school completion rates, rates of college acceptance), and there is now a very significant minority middle class (Jennings, 1996)." Continuing in this vein, Glickman observed that "40 percent of African Americans are solidly in the middle class (a jump from 5 percent before 1960)" (p. 115).

Noting that scores from schools with poor students are most often lower than test results from schools with higher socioeconomic status, the casual observer could mistakenly assume that the relationship was inevitable. In schools, which are clearly focused on academic improvement, test scores can and do climb (Lake, et al., 1999). In the context of this study, will the data explain the relationship between SES and school restructuring or between SES and

achievement? Socioeconomic status does not determine learning ability or presuppose the level of academic performance for individual children. This proposition should not, however, bias research on groups of children or schools. In the current study finding significant relationships between SES and the degree of school restructuring and between student performance on the Washington Assessment of Student Learning (WASL/4) is anticipated.

#### School Size

The socioeconomic status (SES) of students, their ethnicity, and school restructuring appear related to student achievement. The success of school reform and restructuring, moreover, seems more feasible within smaller organizations, where concerted group effort and systemic or fundamental change should occur more readily (Owens, 1995). Logically, smaller elementary schools should be able to identify their strengths and weaknesses, design curricular and instructional solutions, and try-out different ways to improve student learning more efficiently and, perhaps, more effectively than larger schools. The literature, in fact, tends to support the view that students from smaller schools outperform students from larger institutions at all grade levels: elementary (Klonsky, 1995; Plecki, 1991), secondary (Bracey, 1998; Lee & Smith, 1994; Raywid, 1997; Stiefel, et al., 1998), and post-secondary (Huffman, 1997).

The relationship between small school size and higher achievement, however, is influenced by other variables, which appear to modify the strength of the size-achievement relationship or even reverse it under certain circumstances.

Chief among other variables discussed in the literature is the socioeconomic status of the student body, which itself is related to ethnicity.

As previously noted, academic achievement is not only related to ethnicity and school size but also to socioeconomic status (SES). School size and SES interact. Based on his studies in West Virginia, which replicated studies in California, Howley (1997) concluded that in larger schools more affluent students did better academically than poorer students.

What I found confirmed a differential effect of [school] size based on socioeconomic status. In schools and districts serving populations with high socioeconomic status, size was positively related to achievement: The higher the SES, the stronger the relationship became. But the opposite was true for schools serving low-SES student populations. There, the relationship was negative and the lower the SES, the more negative the relationship. (p. 26)

In other words, if the socioeconomic status of all students fell within a narrow range, the school size variable would be a more dependable factor for predicting student achievement. Although the findings suggested that the SES variable might influence student achievement more than the number of students enrolled at the school, they also suggested that smaller schools should be retained and improved, at least where increasing the achievement of lower SES students is the

goal. According to the author, "If achievement is the goal, bigger schools are counterproductive to impoverished children" (p.26).

Neither socioeconomic status (SES) nor school size can predict student achievement independently of the other variable. Contradicting the notion that students in smaller schools necessarily perform better than students in larger schools, Stevenson (1996) in a study of South Carolina elementary schools found a positive, though relatively small, relationship between larger schools and sustained academic achievement. He observed, however, that the smaller schools in the study tended to serve lower SES populations, which might account for their less impressive record on student achievement than the larger schools.

Adding to the mix different variables than ethnicity and SES further complicated the analysis of the relationship between school size and student achievement. Stevenson & Pellicer (1998), for example, identified and discussed several other variables, affecting the role which school size plays in learning outcomes: the caring atmosphere of small schools, the specialized faculty of large schools, the quality of teacher training, the vision of school leaders, and parent involvement. They concluded that there was no optimal school size, a position shared by other researchers.

When Witcher & Kennedy (1996) examined the links between school size and achievement, they settled on a moderate position, endorsing both large and small schools. They concluded that larger schools could be considered better, because they offered more curricular choices and facilities, and smaller buildings

could be favored, because they provided more personalized learning environments. How these characteristics affected student achievement was, however, not made clear. Based on their review of 31 references, the editors concluded that school size was not a statistically significant predictor of student achievement.

In the context of this study, will the data reveal that school size, as measured by enrollment, is related to student achievement and/or the degree of school restructuring? Accepting the proposition that school size influences but does not independently predict the level of academic performance, I anticipate finding that school size will not emerge as the best predictor of scores on the 1997 WASL, regardless of the degree of school restructuring.

The literature suggested that 3 potential predictors identified in this study—student ethnicity, the socioeconomic status of the student body, and the size of school enrollment—were related to student achievement. The strength of the relationships and the interaction among the variables, however, were not clearly evident.

### Conclusion

The foregoing review of literature on school reform and restructuring accomplished 6 purposes. It defined key terms, described educational innovations and initiatives with evidence of improved student achievement, explored the effectiveness of highly rated instructional models and approaches, summarized Washington reform initiatives, identified themes common to successful reform

and restructuring programs, and discussed the potential predictor variables of this study.

For purposes of this study, the term "school restructuring" means basic or systemic educational change, which transcends familiar attempts to patch-up perceived flaws in curriculum and instruction. Restructuring, therefore, implies fundamental modifications in organizational and teaching behaviors, designed specifically to improve student learning and skills (Ellis & Fouts, 1996; Sizer, 1996).

Using this construct of restructuring, reforms identified in the literature were required to demonstrate student achievement effectiveness, in order to qualify as a viable educational innovations or initiatives. The review of literature, for example, identified 3 strong school wide reform approaches, one of which had an established record on student achievement gains in Title I remedial education: Success for All (PreK-6). Researchers, for example, reported significant gains in reading test scores (Slavin & Fashola, 1998; Stringfield, et al., 1997).

Although the literature on school reform contained references to programs with affective and social goals, the review focused squarely on highly rated instructional models and approaches with evidence of improved student learning and skills (American Institutes for Research, 1999; Slavin & Fashola, 1998; Slavin, et al., 1996). This limitation was consistent with the primary purpose of this study to explore relationships between the degree of restructuring in Western

Washington Elementary schools and the results on criterion referenced tests administered in 1997 to 4<sup>th</sup> grade students in public schools.

Focusing the scope of review on programs with promise for student achievement gains was also consistent with current Washington mandates on educational reform, which anticipate positive learning results. Clearly identified and measurable learning and skills standards are the centerpiece of local innovations implementing state directives. The 4<sup>th</sup> grade tests, in particular, assess performance in areas identified by the Washington State Legislature as essential to academic success: reading, mathematics, writing and the listening component of communications (Washington State Legislature, 1993, 1997; Washington State Commission on Student Learning, 1998b).

Two themes emerged from the review of literature, common in varying degrees to reform models and approaches demonstrating positive effects in student achievement: concerted group effort and systemic or fundamental change. Successful reform and restructuring programs tended to exhibit organizational behaviors characterized as cooperative, broadly based, and/or collaborative. In addition, schools with successful innovations changed in fundamental ways their curriculum and/or instructional methods. Noteworthy among reform models illustrating the qualities of these themes were Success for All (Slavin, Madden, Dolan, & Wasik, 1996), Consistency Management and Cooperative Discipline (Fashola & Slavin, 1998), Expeditionary Learning Outward Bound (Farrell & Leibowitz, 1998), and High Schools That Work (American Institutes for

Research, 1999). Schools adopting and implementing these kinds of programs were clearly restructured in the positive sense. Students learned more.

In this study I ask 3 questions. Are student ethnicity, the socioeconomic status of the student body, and the size of school enrollment related to the degree of school restructuring? Is the degree of school restructuring related to the level of academic performance? Which of these variables are the best predictors of student achievement? The literature shows that all 4 variables are, indeed, related to student performance: ethnicity (Superintendent of Public Instruction, 1999), SES (Lake, et al., 1999), school size (Klonsky, 1995), and restructuring (American Institutes for Research, 1999).

However, the literature also reveals that the ethnicity, SES, and school size variables interact with each other. No single one of these variables can, therefore, predict student achievement independently of the other two. The analysis is further confounded by intervening variables. They include, for example, school atmosphere, specialized facilities, teacher training, the vision of school leaders, and parent involvement (Stevenson & Pellicer, 1998).

## CHAPTER 3

### Research Methodology

#### Research Design

A correlation design was used to explore the relationships among 11 variables, including elementary school restructuring, 4<sup>th</sup> grade test results, and selected demographics. In addition, multiple regression procedures were used to find the best predictors of student achievement (Borg & Gall, 1989; Hinkle, et al., 1994; Kachigan, 1991). Criterion variables in the multiple regression analysis were results from the 1997 administration of the 4<sup>th</sup> grade Washington Assessment of Student Learning (WASL/4) for reading, mathematics, writing, and listening. Predictor variables included the degree of school restructuring—the total score and scales for instructional enhancement, fundamental change, and collaboration—the socioeconomic status (SES) of the student body, ethnicity of the student body, and school size by enrollment.

#### Participants and Sample

One hundred eleven (111) elementary and secondary schools from 16 school districts in 4 Western Washington counties: King, Kitsap, Pierce and Snohomish cooperated in this study. See Table 1 for the profile of school districts by county, character, and enrollment. Classroom teachers at each school voluntarily completed the School Practices and Changes Questionnaire (SPCC) yielding 2,197 useable responses. Elementary classroom teachers re

52% of the total: 1,141 kindergarten-5<sup>th</sup>/6<sup>th</sup> grade teachers and associated specialists in music, art, and physical education. Other professional personnel, such as psychologists, counselors, nurses, and building administrators, were excluded from the definition of classroom teacher.

The unit of study was the individual school. Although project researchers collected data from 75 elementary schools, the sample was established at 47 schools. The school sample was defined by 2 criteria. First, at least 50% of the classroom teachers at the school responded to the SPCQ. Secondly, data on the 11 variables: the degree of school restructuring (4), WASL/4 results (4), ethnicity, SES, and school enrollment, were available. The 50% participation criterion was chosen, in order to ensure that the questionnaire data fairly reflected the views of the teacher population at each school. For sample schools, moreover, the presence of data on all variables was considered essential to statistical analysis of data on the research questions.

Table 1

School District Profiles by County, Character, and Enrollment

District	County	Character	Enrollment
Steilacoom	Pierce	Suburban	1,575
Granite Falls	Snohomish	Rural	1,664
Lakewood	Snohomish	Suburban	1,899
Bainbridge Island	Kitsap	Suburban	3,264
North Kitsap	Kitsap	Suburban	6,641
Bremerton	Kitsap	suburban	6,428
White River	Pierce	Rural	3,596
Arlington	Snohomish	Suburban	4,112
Monroe	Snohomish	Suburban	4,880
Enumclaw	King	Rural	5,003
Franklin Pierce	Pierce	Suburban	6,483
Sumner	Pierce	Suburban	6,800
Snohomish	Snohomish	Suburban	8,040
Marysville	Snohomish	Suburban	10, 211
Northshore	King/Snohomish	Suburban	18,981
Seattle	King	Urban	46,225

Note. Enrollment figures were obtained from the 1996-1997 Washington Education Directory.

Random selection of districts and elementary schools from the 4 Puget Sound counties would have been preferred. Because of the policies and practices of individual school districts, however, reaching that ideal was not feasible. Negotiations in the field by 5 project researchers produced samples of convenience: volunteer districts, elementary schools, and classroom teachers. Non-random sampling, of course, weakened the external validity of study findings. Any attempt, therefore, to make generalizations from the findings beyond the 4 county-16 district region of the study should be cautiously undertaken (Borg & Gall, 1989).

### Measures

#### School Practices and Changes Questionnaire

As previously noted, the elementary school was the unit of study, rather than the district or individual classroom teachers. Teacher answers on the SPCQ provided the base data for each school. See Appendix A for the School Practices and Changes Questionnaire (SPCQ). During the spring of 1997 through the winter of 1998, the 5 members of the research team gathered SPCQ responses from classroom teacher volunteers at cooperating elementary and secondary schools. Data from 2 sections of the questionnaire were used in this study. Section 1 identified the district and elementary school and confirmed that the respondents were classroom teachers. The 16 items of Section 5 reported teacher perceptions of restructuring at their respective elementary schools on a 7-point, Likert-type scale.

### Variables and Predictors

Degree of school restructuring. Teacher responses on Section 5 of the SPCQ, captioned "Teacher Perceptions," provided the data used to describe the degree of school restructuring construct. As a beginning point, the interpretation of scales offered by Fouts (1997) was adopted.

For section 5 of the SPCQ the response range is 1 to 7, with 7 being strongly agree with the statement and 1 being strongly disagree. The response 4 is neutral or no opinion. Generally, for the Collaboration, Fundamental Change and Instructional Enhancement scales, a mean score above 4.0 represents a positive view of the affects of restructuring in that area and a mean score of below 4.0 represents a negative view. [Emphasis added]. (p. 6)

It should be noted that the values on the restructuring scales represent the degree to which change has taken place, rather than precise measurements of change.

The level of teacher satisfaction with restructuring at each elementary school, as reflected in their scale scores, was further interpreted and applied to derive a single value through factor analysis (Kline, 1994), which represented the degree of school restructuring: a principal independent/predictor variable of this study. The degree of school restructuring for each school was expressed as the "Total Restructuring Score" (TRS) or the composite score of 3 factors or scales:

*collaboration, fundamental change, and instructional enhancement* scales and the individual scales (Ellis & Fouts, 1994; Fouts, 1997; Van Slyke, 1998). See Appendix B for development and technical information on the SPCQ, including a table showing the 16 items of Section 5 and factor loadings for the 3 scales (Kline, 1994).

Socioeconomic status of the student body. Finding objective data on the socioeconomic status (SES) of the student body presented real challenges. In the context of this study and for obvious reasons, attempts to survey directly the parents and guardians of students in sample elementary schools about their family income would probably have failed. First, the collection of data would have required a separately developed and administered survey instrument. Second, families might have considered the inquiry an invasion of privacy and might, therefore, have been unwilling to share sensitive financial information. Third, results would likely have been so incomplete that the SES variable could not have been used. These barriers have affected other researchers interested in wealth measures, including federal, state, and local agencies.

Government and public school officials, who make service decisions based on client need, gather and use conveniently available information. Local agencies responsible for welfare administration, for example, routinely check client income for purposes of determining eligibility for various entitlements and benefits. Aggregated, these data not only assist agencies to plan but also to categorize groups of people on the basis of wealth for other purposes, which also

approximates socioeconomic status. Most public schools operate federally subsidized food service programs. To establish pupil eligibility for free and reduced-price (F & R) meals, families must report to the school district their sources and levels of income. Like the welfare agencies, school systems can use F & R lunch data to determine the proportion of students in a school, which is economically disadvantaged, providing a convenient and objective approximation of socioeconomic status (SES).

The ratio of students eligible for free and F & R lunch prices defined the SES of the student body and was an independent/predictor variable in this study. In August of 1998 the Office of the Superintendent of Public Instruction (OSPI) for Washington transmitted F & R lunch data on all schools in the 4-county region, including elementary schools in the sample (OSPI, 1994, 1997). Free and reduced lunch information for 1994 was the earliest available from OSPI. Using these data, the socioeconomic status of the student body at each school was determined by averaging the 1994 and 1997 ratios of students eligible for F & R lunches. The mean of the ratios between 1994 and 1997 was used as the predictor variable.

Student ethnicity. The measure for student body ethnicity was the percentage of white students at each school and was derived from state records which classify students as Native American, Hispanic, Black, Asian, and White. Between 1993 and 1996 the white student ratios changed very little, from no

change to .06 of the school population. The mean of the annual ratios was selected as the predictor variable for ethnicity.

School size by enrollment. Enrollments in 1996-1997 defined the school size variable for the 47 elementary schools in the sample (Washington Education Directory, 1996). They ranged from 141 to 921 students with a mean enrollment of 496.

Correlations were used to explore relationships among the above-described variables: SES of the student body, ethnicity of the student body, school size by enrollment, student attainment on the 1997 WASL/4, and the degree of school restructuring, measured by the SPCQ. Stepwise multiple regression procedures were then used to explore whether the degree of school restructuring and the demographic variables were predictors of student achievement, as measured by WASL/4.

Criterion: 1997 4<sup>th</sup> Grade Washington Assessment for Learning

In 1993 the Washington State Legislature enacted HB 1209, initiating statewide school reform. Since that threshold event, politicians, parents, and educators in 296 school districts have focused squarely on the goal of improved student learning. By spring 1997 the Washington State Commission on Student Learning and the Superintendent of Public Instruction were prepared to pilot with 4<sup>th</sup> grade students a newly crafted, criterion-referenced performance assessment. In the initial round of testing the WASL/4 was administered in 270 volunteer school districts, providing performance assessments in the 4 areas identified by

the Legislature as essential to academic success: reading, mathematics, writing, and listening.

Forty-eight percent (48%) of the students met the reading standard, 42% met the benchmark in writing, 22% satisfied the mathematics standard, and 62% attained the mark on listening, a component of communications (Washington State Commission on Student Learning, 1997). For each school in the sample the Superintendent of Public Instruction supplied ratio data on benchmark attainment (OSPI, 1997).

In order to meet the benchmark or standard for each content area: reading, writing, mathematics, and listening, the pupil had to score 400 on a scale of 150 to 600 (Washington State Commission on Student Learning, 1997a). The Commission on Student Learning used the term "standard" to mean "the level of performance which demonstrates a student has achieved the knowledge and skills described in the essential academic learning requirements." In order to meet the standard, moreover, a student was required to demonstrate proficiency in "factual knowledge, application of that knowledge, and reasoning skills appropriate to the fourth grade" (p. 7).

Reading. Composite scores by school on each test, converted to the percentage of students attaining the standards reading, mathematics, writing, and listening, were used by this study. On a statewide basis less than half of the 4<sup>th</sup> grade students met the standard in reading: 47.6 percent (Washington State

Commission on Student Learning, 1997b). Reading performance focused on 2 domains. Comprehension meant understanding major ideas, supportive details, vocabulary, titles, headings, and how to use tables of content and captions and included the ability to summarize and make inferences. Analysis and interpretation required the student to compare and contrast texts; analyze the “author’s purpose and effectiveness, use of language, style, and perspective;” and synthesize information and ideas (Washington State Commission on Student Learning, 1997a, p.8).

Mathematics. Only 21.5 percent of 4<sup>th</sup> grader students attained the benchmark (Washington State Commission on Student Learning, 1997b). Test items looked for applied knowledge and skill in number sense, measurement, geometric sense, probability and statistics, algebraic sense, and mathematical problem-solving, reasoning, communication, and connections, i.e., how mathematics “applies in other subjects and non-school contexts” (Washington State Commission on Student Learning, 1997a, p.9).

Writing. On a statewide basis 42.2 percent of the students met the writing standard (Washington State Commission on Student Learning, 1997b). Writing skills were evaluated and scored using 2 sets of criteria. On conventions students were required to write complete and fluent sentences with “correct usage, spelling, punctuation, and capitalization” (Washington State Commission on Student Learning, 1998a, p. 14). On the second set of criteria: content, organization, and style students had to demonstrate writing proficiency through

“focus, supporting detail, organization, purpose, completeness, transitions, vocabulary, sentence structure and variety, and voice” (p.14).

Listening. The statewide average for listening surpassed the other 3 tested areas by a substantial margin. Sixty-one point seven percent (61.7%) of the students met the standard on this component of communication, an essential academic learning requirement (Washington Commission on Student Learning, 1997b). Basically, the 4<sup>th</sup> grade students were evaluated on their ability to follow oral directions. The test measured how well students listened and observed for understanding by assessing their skills to “focus attention,” “listen and observe to gain and interpret information,” and “check for understanding by asking questions and paraphrasing” (Washington State Commission on Student Learning, 1998b, pp. 39 & 41).

#### Data Analysis

Data from each of the 47 elementary schools were obtained on the following variables.

1. Restructuring variables. Four variables, derived from classroom teacher responses to the SPQC, defined the degree of school restructuring construct. The “Total Restructuring Score” (TRS) quantified the degree of school restructuring for each school with a single value. The TRS was the composite score of 3 factors or scales: *collaboration*, *fundamental change*, and *instructional enhancement* scales, derived by factor analysis of the classroom teacher responses

on Section 5 of the School Practices and Changes Questionnaire (SPCQ) (Fouts, 1997; Van Slyke, 1998). See Appendix B for development and technical information on the SPCQ, which used a 7-point, Likert-type scale to elicit teacher perceptions on restructuring efforts at their schools.

2. Demographics. Three demographic statistics included the percentage of white students in the school population, the percentage of students who were eligible for free and reduced priced meals (the measure for SES), and school size by enrollment.
3. Student achievement. The percentage of students attaining EALR standards for reading, writing, mathematics, and listening were measured by the 1997 WASL/4.

Employing a widely accepted computer package for statistical analysis, SPSS (Green, et al., 1997), I analyzed data through a variety of procedures, which centered on correlation and multiple regression (Hinkle, et al., 1994; Kachigan, 1991). Correlations were conducted on the data pertaining to research questions 1, 2, and 3, in order to determine relationships between the degree of school restructuring (TRS and 3 scales) and the socioeconomic status (SES) of the student body, the ethnic make-up of the school, and enrollment of the school. Correlations were also computed with data for research question 4, in order to determine relationships between the degree of school restructuring and student performance on WASL/4 assessments for reading, writing, mathematics, and

listening. For research question 5 stepwise multiple regression procedures were employed to determine which of the independent variables were the best predictors of student achievement on WASL/4 in reading, writing, mathematics, and listening.

## CHAPTER 4

### Findings

#### Introduction

In this chapter descriptive data on the sample of 47 elementary schools and on 11 variables are presented. The variables included the degree of school restructuring score and scales, 1997 WASL/4 results, SES of the student body, ethnicity of the student body, and enrollment. Following description of the total sample, pertinent findings on each of the 5 research questions are presented.

#### Descriptive Data

##### School Sample

The unit of study was the individual school. One hundred eleven (111) elementary and secondary schools from 16 school districts in 4 Western Washington counties: King, Kitsap, Pierce and Snohomish cooperated in this study. See Table 1 (Chapter 3) for the profile of school districts by county, character, and enrollment. Classroom teachers at each school voluntarily completed the School Practices and Changes Questionnaire (SPCQ), yielding 2,197 useable responses. Elementary classroom teachers represented 52% of the total: 1,141 kindergarten-5<sup>th</sup>/6<sup>th</sup> grade teachers and associated specialists in music, art, and physical education.

Researchers collected data from 75 elementary schools. To be included in this study the school had to meet 2 criteria. First, at least 50% of the classroom teachers at the school must have completed the SPCQ. The 50% participation

criterion was chosen, in order to ensure that the questionnaire data fairly reflected the views of the teacher population at each school. Second, data on all 11 of the school variables had to be available. The presence of data on all variables at each school in the sample was essential to statistical analyses on the research questions. Using these 2 criteria yielded a final sample of 47 schools.

### Restructuring Scales

Teacher responses on Section 5 of the SPCQ, captioned “Teacher Perceptions,” provided the data used to describe the degree of school restructuring construct. The SPCQ yielded 3 scales scores, representing collaboration, fundamental change, and instructional enhancement. The degree of school restructuring for each school was further expressed as the “Total Restructuring Score” (TRS)—the composite score of the 3 factors or scales.

Teachers at sample elementary schools were relatively more positive about collaboration and fundamental change, than they were about instructional enhancement. The mean TRS for all schools suggested that teachers were somewhat positive in their overall view of the effects of changes leading to restructuring since 1993. See Table 2 for means and standard deviations on the degree of school restructuring.

Table 2

Degree of School Restructuring: Total and Scale Scores

Degree of School Restructuring		
Scale	Mean Score	SD
Collaboration	4.82	.50
Fundamental Change	4.90	.45
Instructional Enhancement	3.84	.49
Total	13.58	1.29

Performance Test Results

The mean performance of 4<sup>th</sup> grade students in sample schools compared favorably with statewide means on the 1997 Washington Assessment of Student Learning (WASL/4): criterion-referenced tests on reading, mathematics, writing, and listening. See Table 3 for the comparison of results between schools in the sample and participating school districts statewide. Though not randomly selected, sample schools in this study were representative of Washington schools. In other words, WASL/4 results from the sample were very reflective of scores from elementary schools across the state.

Forty-eight point three percent (48%) of the students in sample schools reached the state benchmark for reading compared to 47.6% of all Washington 4<sup>th</sup> graders. The gap in writing was also narrow, reflected in the results from the sample ( $\bar{M}$  = 43%) and the state ( $\bar{M}$  = 42%). The difference in achievement on

listening skills was only slightly greater: sample schools ( $\underline{M} = 64\%$ ) and state schools ( $\underline{M} = 62\%$ ). In mathematics statewide results ( $\underline{M} = 22\%$ ) exceeded average results of sample schools ( $\underline{M} = 20\%$ ).

Table 3

Washington Assessment of Student Learning Results: Sample and Statewide

Test	Results		
	Sample	Statewide	Difference
Reading	48.3%	47.6%	0.7%
Writing	43.1%	42.2%	0.9%
Listening	63.6%	61.7%	1.9%
Mathematics	20.1%	21.5%	1.4%

Socioeconomic Status

Socioeconomic status (SES) was measured by the percentage of students in each school eligible for the federally-subsidized free and reduced-price (F & R) meal program. Data on SES are summarized in Table 4. In the sample of 47 elementary schools 33% of the students were eligible for the subsidized meal program. Eligibility by school ranged from 2 to 81%. On the SES variable the distribution of sample schools was skewed slightly in the positive direction.

Table 4

Socioeconomic Status of the Student Body: Free and Reduced-price Meal Eligibility

Free and Reduced-price Meals			
<u>M</u>	<u>SD</u>	Range	Skewness, <u>SE</u>
.329	.202	.79	+0.595, 0.347

Student Body Ethnicity

Student body ethnicity was represented by the percentage of white students in each school. In the sample of elementary schools the percentage of white students averaged 85%, skewed heavily in the negative direction within the distribution. The student body of the average school was predominantly white.

Data on ethnicity are summarized in Table 5.

Table 5

Student Body Ethnicity: Ratio of White Students

White Students			
<u>M</u>	<u>SD</u>	Range	Skewness, <u>SE</u>
.851	.132	.72	-2.51, 0.347

Enrollment

In the sample of elementary schools enrollment ranged from 141 to 921, averaging 495 pupils. On the enrollment variable the distribution of sample schools was quite even, approaching a normal distribution. Data on school size are summarized in Table 6.

Table 6

School Size: Enrollment

Number of Students			
<u>M</u>	<u>SD</u>	Range	Skewness, <u>SE</u>
495.7	127.9	780	+0.02, 0.347

Research QuestionsQuestion 1: Restructuring and Socioeconomic Status

*What is the relationship between the degree of elementary school restructuring and the socioeconomic status of the student body?* Using SPSS procedures, the socioeconomic status of the student body (SES), the total restructuring score (TRS), and the scales for collaboration, instructional enhancement, and fundamental change were correlated (Green, et al., 1997). These correlations are presented in Table 7.

On this 2-tailed test no statistically significant correlations at the .01 level were found between the school restructuring variables and SES. Because of the large number of correlations, the probability for a Type I error was unacceptably high at the .05 alpha level. Therefore, an alpha level of .01 was adopted, yielding no significant correlations between the degree of school restructuring and SES. These findings were confirmed by using the alternative Bonferroni method to control for Type I errors in multiple comparison situations. In applying this method the .05 alpha level was divided by 4 comparisons, which reset the alpha level at .013 (Green, et al., 1997).

Table 7

Degree of School Restructuring and Socioeconomic Status of the Student Body

Socioeconomic Status		
Restructuring Scale	r	p
Instructional Enhancement	+.324	.026
Collaboration	+.344	.141
Fundamental Change	+.180	.199
Total	+.247	.094

Note. All correlations ns.

Question 2: Restructuring and Ethnicity

*What is the relationship between the degree of elementary school restructuring and the ethnic make-up of the school?* Using SPSS procedures, the ethnicity of the student body (percentage of white students), total restructuring score (TRS), and the scales for collaboration, instructional enhancement, and fundamental change were correlated (Green, et al., 1997). These correlations are presented in Table 8. On this 2-tailed test no statistically significant correlations were found between student body ethnicity and the degree of school restructuring at the .01 alpha level.

Table 8

Degree of School Restructuring and Ethnicity of the Student Body

White Student Ratio		
Restructuring Scale	r	p
Instructional Enhancement	-.230	.120
Collaboration	-.057	.703
Fundamental Change	-.086	.568
Total	-.139	.351

Note. All correlations ns.

Question 3: Restructuring and Enrollment

*What is the relationship between the degree of elementary school restructuring and enrollment of the school?* Using SPSS procedures, enrollment, total restructuring score (TRS), and the scales for collaboration, instructional enhancement, and fundamental change were correlated (Green, et al., 1997). These correlations are presented in Table 9. On this 2-tailed test no statistically significant correlations were found between enrollment and the degree of school restructuring at the .01 alpha level.

Table 9

Degree of School Restructuring and School Size

Restructuring Scale	Enrollment	
	r	p
Instructional Enhancement	-.259	.079
Collaboration	-.180	.227
Fundamental Change	-.065	.665
Total	-.190	.200

Note. All correlations ns.

Question 4: Restructuring and WASL/4

*What is the relationship between the degree to which an elementary school has been restructured and the attainment of its students on the new Washington State 4<sup>th</sup> grade assessments for reading, mathematics, writing, and the listening component of communications?* Using SPSS procedures, 8 variables from the sample of schools were correlated (Green, et al., 1997). They included the 1997 WASL/4 for reading, mathematics, writing, and listening and the degree of school restructuring scales and total restructuring score (TRS). These correlations are presented in See Table 10.

On this 2-tailed test, one statistically significant correlation was found between the degree of school restructuring and WASL/4 at the .01 level. Because of the large number of correlations, the probability for a Type I was unacceptably high at the .05 alpha level. Therefore, an alpha level of .01 was adopted, yielding a statistically significant negative correlation between instructional enhancement

and reading,  $p < .005$ . As the score for instructional enhancement increased, attainment of the reading benchmark decreased.

Table 10

Degree of School Restructuring and WASL/4 Results

Restructuring and WASL/4 Correlations ( r )				
Scale	Reading	Math	Writing	Listening
Instructional Enhancement	-.402**	-.233	-.197	.291
Collaboration	-.187	-.062	-.053	-.131
Fundamental Change	-.226	-.085	-.041	-.114
Total	-.304	-.142	-.109	-.201

Note. \*\* $p < .01$ .

Question 5: Best Predictors of Achievement

*Which variables are the best predictors of student achievement—the degree of school restructuring, the socioeconomic status of the student body, student body ethnicity, or school size?* Four multiple linear regression procedures were used (Borg & Gall, 1989; Green, et al., 1997; Hinkle, et al., 1994; Kachigan, 1991). The 1997 WASL/4 results for reading, mathematics, writing, and listening were the dependent/criterion predictor variables and the TRS, the 3 restructuring scales, SES, ethnicity, and enrollments were the independent/predictor variables.

Table 11 displays the correlation matrix of all the predictors and criterion variables.

Table 11

Correlation Matrix of Predictors and Criterion Variables

	Collabor	Instr Enh	Fund Ch	Restruct	Ethnicity	Enrollm
Collabor		.557**	.761**	.873**	-.057	-.180
Instr Enh	.557**		.781**	.876**	-.230	-.259
Fund Ch	.761**	.781**		.941**	-.086	-.065
Restruct	.873**	.876**	.941**		-.139	-.190
Ethnicity	-.057	-.230	-.086	-.139		.404**
Enrollm	-.180	-.259	-.065	-.190	.404**	
<u>M</u> SES	.141	.324*	.199	.247	-.699**	-.305*
Math	-.062	-.233	-.085	-.142	.271	.338*
Reading	-.187	-.402**	-.226	-.304*	.486**	.271
Writing	-.053	-.197	-.041	-.109	.296*	.151
Listening	-.131	-.291*	-.114	-.201	.647**	.275

\*p<.05. \*\*p<.01.

(Table continued)

Table 11 (continued)

Correlation Matrix of Predictors and Criterion Variables

	<u>M</u> SES	Math	Reading	Writing	Listening
Collabor	.141	-.062	-.187	-.053	-.131
Instr Enh	.324*	-.233	-.402**	-.197	-.291*
Fund Ch	.199	-.085	-.226	-.041	-.114
Restruct	.247	-.142	-.304*	-.109	-.201
Ethnicity	-.699**	.271	.486**	.296*	.674**
Enrollm	-.305*	.338*	.271	.151	.275
<u>M</u> SES		-.656**	-.751**	-.487**	-.692**
Math	-.656**		.868**	.604**	.640**
Reading	-.751**	.868**		.654**	.816**
Writing	-.487**	.604**	.654**		.527**
Listening	-.692**	.640**	.816**	.527**	

\*p&gt;.05. \*\*p&gt;.01.

Reading. Results of the multiple regression with reading as the criterion variable are shown in Table 12, revealing that the socioeconomic status (SES) of the student body was the only predictor of student achievement in reading. The relationship between SES and reading achievement was very strong. The coefficient of determination ( $R^2$ ) indicated that 56% of the variance in reading was predictable from SES.

Table 12

Best Predictor of Performance on WASL/4 for Reading: Socioeconomic Status (SES) of the Student Body

Reading Performance			
SES	<u>R</u>	<u>R</u> <sup>2</sup>	p
	.751***	.563	.000
<u>F</u> (1, 45) = 58.05. ***p<.001.			

Mathematics. Results of the multiple regression with mathematics as the criterion variable are shown in Table 13, revealing that the socioeconomic status (SES) of the student body was the only predictor of student achievement in mathematics at the .01 level of significance. The regression procedure reported 2 other statistically significant predictors of reading achievement for the sample schools at the .05 level of significance. They, however, added only small increments to the coefficient of determination in the 3-predictor model, 7% and 5%, respectively.

The relationship between SES and mathematics achievement was moderately strong. The coefficient of determination (R<sup>2</sup>) on that predictor alone indicated that 43% of the variance in mathematics was predictable from SES. Adding ethnicity and enrollment predictors to SES increased R<sup>2</sup> to 55%.

Table 13

Best Predictors of Performance on WASL/4 for Mathematics: Socioeconomic Status (SES), Ethnicity, and Enrollment

Mathematics					
Predictor	<i>Beta</i>	<i>r</i>	<i>R</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> Increment
SES	-.901	-.656**	.656	.430	
Ethnicity	-.459	+.271*	.706	.499	.069
Enrollment	+.248	+.338*	.742	.551	.052

$F(3, 43) = 17.56$ . \* $p < .05$ . \*\* $p < .01$ .

Writing. Results of the multiple regression with writing as the criterion variable are shown in Table 14, revealing that the socioeconomic status (SES) of the student body was the sole predictor of student performance in writing. The relationship between SES and writing performance was, however, moderate. The coefficient of determination (*R*<sup>2</sup>) indicated that 24% of the variance in reading was predictable from SES.

Table 14

Best Predictor of Performance on WASL/4 for Writing: Socioeconomic Status (SES) of the Student Body

Writing Skill			
SES	<i>R</i>	<i>R</i> <sup>2</sup>	<i>p</i>
	.487***	.238	.001

$F(1, 45) = 14.02$ . \*\*\* $p < .001$ .

Listening. Results of the multiple regression with listening as the criterion variable are shown in Table 15, revealing that the socioeconomic status

(SES) of the student body was the best predictor of student performance in listening skills at the .001 level of significance. The regression procedure reported another statistically significant predictor of listening for the sample schools, also at the .001 level. Ethnicity, however, added a small increment to the coefficient of determination in the 2-predictor model.

The relationship between SES and listening performance was moderately strong. The coefficient of determination ( $R^2$ ) on that predictor alone indicated that 48% of the variance in listening performance was predictable from socioeconomic status. Adding the ethnicity predictor to SES increased  $R^2$  to 55%.

Table 15

Best Predictors of Performance on WASL/4 for Listening: Socioeconomic Status (SES) and Ethnicity

Predictor	Listening Skills				
	<i>Beta</i>	<i>r</i>	<u>R</u>	<u>R<sup>2</sup></u>	<u>R<sup>2</sup></u> Increment
SES	-.432	-.692***	.692	.478	
Ethnicity	+.372	+.674***	.741	.549	.071

$F(2, 44) = 26.78$ . \*\*\* $p < .001$ .

Socioeconomic status (SES) was either the sole or the best predictor of student performance in all areas on the 1997 WASL/4. In the final chapter these findings will be interpreted and discussed.

## CHAPTER 5

### Summary and Discussion

#### Purposes and Research Design

The primary purpose of this study was to explore relationships between the degree of restructuring in Western Washington elementary schools and the results on criterion referenced tests administered in 1997 to 4<sup>th</sup> grade students in public schools. This research focused specifically on the degree of elementary school restructuring, other school variables, and the assessment of student performance, which has been developed subsequent to enactment of House Bill 1209: the Education Reform Act of 1993 (Washington State Legislature, 1993). The 4<sup>th</sup> grade tests assess performance in areas identified by the Washington State Legislature as essential to academic success: reading, mathematics, writing, and the listening component of communications.

A correlation design was used to explore the relationships among 11 variables, which described elementary school restructuring, 4<sup>th</sup> grade test results, and selected demographics. Multiple linear regression procedures were used to find the best predictors of student achievement. Criterion variables in the multiple regression analysis were results from the 1997 administration of the 4<sup>th</sup> grade Washington Assessment of Student Learning (WASL/4) for reading, mathematics, writing, and listening. Predictor variables included the degree of school restructuring—the total score and scales for instructional enhancement,

fundamental change, and collaboration—the socioeconomic status (SES) of the student body, ethnicity of the student body, and school size by enrollment.

### Interpretation and Discussion of Findings

Since 1993, the public schools of Washington State have focused a great deal of attention on educational reforms, responding to legislatively imposed academic standards, assessment, and timelines. In this study I looked for evidence of results, i.e., relationships between reform efforts and 4<sup>th</sup> grade student achievement. Although comparing the level of school restructuring with student performance on the standards suggested some connections, e.g., instructional enhancement and reading, it also raised questions on the efficacy of school reforms, especially where the best predictor of student achievement was socioeconomic status (SES), not the degree of school restructuring. SES, in fact, emerged as the best predictor over 6 other variables, including ethnicity, enrollment, and 4 variables describing school restructuring.

### Restructuring and SES (Question 1)

The socioeconomic status (SES) of the student body was not significantly correlated with any of the restructuring variables at the .01 alpha level (Table 7). As noted in Chapter 4, the closest relationship was the correlation between SES and a single restructuring variables, instructional enhancement, at the .05 level of significance ( $p = .026$ ), judged non-significant after resetting the alpha level at .01 to adjust for the risk of a Type I error with multiple correlations. In all cases, the

correlation between SES and the degree of school restructuring was not significant.

This non-significance finding was anticipated in an environment of widespread educational reform and restructuring, where many schools had modified their curricula and instruction and had significantly increased their staff development budgets (Lake, et al., 1999). During 1993-1997, most Washington public schools, especially at the elementary level, addressed the legislatively-mandated essential academic learning requirements (EALRs) and prepared for the Spring 1997 assessment, the WASL/4. In the face of optional testing in 1997 and mandatory assessment thereafter, they had little choice in the matter.

Presumably, the sample schools also participated in program and training improvements. Data on the degree of school restructuring suggested that they did. Collaboration and fundamental change scales were above the midpoint (4.0) on their scales, and the TRS was above the composite midpoint (12.0). On the other hand, data on instructional enhancement were neutral,  $\bar{M} = 3.84 < 4.0$ .

The socioeconomic status (SES) of the student body was measured by the percentage of students eligible for free and reduced-price meals. In the elementary school sample the percentage of students eligible for the subsidized meal program ranged from 2 to 81%,  $\bar{M} = 32.9\%$ . The data also showed that schools with lower SES student populations were not evenly distributed, skewed slightly in the positive direction (Table 4). The presence of lower SES students in all schools was, however, important. In the current environment of statewide

reform, the schools were probably involved in restructuring, regardless of their placement on the SES continuum.

Although SES and school restructuring were not significantly correlated, SES and performance on WASL/4 were related. Discussion of the 5<sup>th</sup> question will, in contrast, emphasize the power of SES in predicting student achievement.

#### Restructuring and Ethnicity (Question 2)

The ethnic make-up of the student body was not significantly correlated with any of the degree of school restructuring variables at the .01 alpha level (Table 8), which paralleled findings on the relationship between SES and restructuring. The review of literature on the relationship between restructuring and race produced a dearth of information. In contrast, the literature revealed many studies connecting race with academic performance, discussed below under the 5<sup>th</sup> question.

This finding of non-significance was anticipated in an environment of widespread school reform and restructuring, where many districts have modified their curricula and instructional strategies and have greatly increased their staff development budgets (Lake, et al., 1999). As previously observed, since 1993 most Washington elementary schools have been addressing the legislatively-mandated essential academic learning requirements (EALRs) and have been preparing themselves for criterion-based assessment, the WASL/4. Preparations probably occurred across the schools, regardless of ethnic make-up.

This finding should also be expected, where the average school in the sample of largely suburban and smaller city schools was predominantly white,  $M = 85.1\%$ ,  $Mdn = 90.6\%$ . The distribution was far from normal, skewed heavily in the negative direction (Table 5). With a correspondingly smaller ratio of minority students in sample schools the race variable was not particularly helpful in gaining a deeper understanding of the dynamics of school restructuring in Western Washington.

In summary, there were no statistically significant relationships between the ethnic make-up of the student body and the degree of school restructuring. It would appear that restructuring was taking place in all types of schools, regardless of student body ethnicity.

#### Restructuring and Enrollment (Question 3)

Logic suggested that smaller schools should be able to identify their strengths and weakness, design curricular and instructional solutions, and experiment with alternatives to improve student learning better than larger schools. The review of literature on the relationship between school restructuring and enrollment produced nothing on point. Although the authorities could offer no insights on enrollment in relationship to reform or restructuring, the literature revealed several studies connecting enrollment with academic performance, discussed below under the 5<sup>th</sup> question. There was, even in that context, disagreement on optimal school size (Witcher & Kennedy, 1996).

It would appear that school restructuring, as defined in this study, has taken place in larger as well as smaller schools. Like the relationship between SES and restructuring and between ethnicity and restructuring, no significant correlations were found between enrollment and any of the restructuring variables. Correlations were, in fact, quite weak on all 4 scales—fundamental change, collaboration, TRS, and instructional enhancement (Table 9).

This non-significance finding was no surprise in the current environment of school reform and restructuring, where many districts have modified the curriculum and instructional strategies and have enhanced staff development opportunities (Lake, et al., 1999). As previously observed, since 1993 most Washington elementary schools have been addressing the legislatively-mandated essential academic learning requirements (EALRs) and have been preparing themselves for criterion-based assessment, the WASL/4. School restructuring—a regional if not a statewide phenomenon—probably occurred across the districts and schools, regardless of level of enrollment.

#### Restructuring and WASL/4 (Question 4)

Statistical analysis of the data on question 4 required multiple correlations of the 8 variables for the degree of school restructuring and WASL/4. Because of the risk for a Type I error with multiple correlations, the alpha level was set at .01, producing a single statistically significant correlation between instructional enhancement and reading (Table 10).

An increase in the instructional enhancement score indicated a decrease in attainment on the reading benchmark. This finding can be explained in several ways. Because of the number of correlations throughout the study, a Type I error remains a possibility, meaning that changes are taking place at all schools, regardless of achievement level. This finding may simply indicate that teachers recognized the need to make changes in lower achieving schools. Conversely, teachers in schools with high scoring students may have been satisfied with their educational strategies and, therefore, reluctant to make programmatic changes. Finally, pressure from mandatory testing alone may be encouraging school reform and restructuring efforts.

The negative correlation between instructional enhancement and reading achievement appeared counterintuitive, until the SPCQ items underlying the instructional enhancement scale were reviewed (Appendix B: SPCQ Development & Technical Information). It could be argued that none of these items were related directly to reading achievement, because they focused on classroom atmosphere, teacher-student relations, and professional growth. Only “innovative teaching methods,” seemed related to student performance in a meaningful way.

Review of the reading section of WASL/4 raised questions about the connection between the Washington reading benchmark and the instructional enhancement scale. Whereas in WASL/4, reading performance focused on comprehension and on analysis and interpretation (Washington State Commission on Student Learning, 1997a), the SPCQ scale for instructional enhancement

focused more on classroom atmosphere, interpersonal relationships, and professional growth than on teaching methods. The significant negative correlation between instructional enhancement scores and attainment on the WASL/4 reading criterion may, therefore, have been a chance finding and nothing more.

Van Slyke (1998) and Fouts (1999) found that CTBS achievement gains from 1993 to 1996 were significantly and positively correlated with the degree of school restructuring. The correlation between instructional enhancement and reading gains, in particular, was significant ( $r = +.40$ ,  $p < .05$ ). Their findings and mine, however, cannot and should not be compared, because we asked different research questions. Whereas, Van Slyke and Fouts correlated the degree of school restructuring with reading gain scores, I correlated the degree of school restructuring with reading benchmark attainment, i.e. achievement level.

#### Predictors of Achievement (Question 5)

The primary purpose of this study was to explore relationships between the degree of restructuring in Western Washington elementary schools and the results on criterion referenced tests administered in 1997 to 4<sup>th</sup> grade students. Using stepwise multiple regression procedures, relationships among the degree of elementary school restructuring, the 4<sup>th</sup> grade test results, and 3 demographic variables: student body SES, student ethnicity, and school size were analyzed, in order to determine the best predictors of student achievement.

Socioeconomic status (SES) of the student body emerged as the best predictor of student performance on the 1997 WASL/4 in all performance domains (Tables 12-15). In 2 areas, reading and writing, SES was the only statistically significant predictor.

Restructuring and Achievement. Findings on this question paralleled question 4 concerning relationships between the degree of school restructuring and WASL/4 variables. In question 5 the degree of school restructuring was not predictive of student achievement. Specifically, the degree of school restructuring was neither significantly correlated with student achievement nor predictive of student achievement on the WASL/4 for reading, mathematics, writing, and listening.

Other researchers have reported positive gains in student performance within the context of school reforms. Those results were particularly evident with programs and approaches exhibiting systemic or fundamental change and concerted group effort, i.e., cooperation, broad participation, and/or collaboration (American Institutes for Research, 1999; Flashola & Slavin, 1998; Slavin & Fashola, 1998; Slavin, et al., 1996; Stringfield, et al., 1997). It must be observed, however, that these attempts at restructuring included wide variations in educational philosophy, sample size and characteristics, measures for achievement, timing, and research design, making generalizations difficult. Finally, it should be reiterated that I did not relate school restructuring to

achievement gains but, instead, related the degree of school restructuring to benchmark attainment, i.e., to the level of achievement.

Whereas Fouts (1999) related highly restructured schools with low 1993 CTBS scores, which were improved by 1997, I related highly restructured schools with 1997 WASL/4 results. Perhaps, the findings simply mean that the more highly restructured schools, which in 1993 were behind on the CTBS, are now even in achievement level, as evidenced by the WASL/4.

Socioeconomic status and achievement. Socioeconomic status (SES) of the student body emerged as the best predictor of student performance on the 1997 WASL/4 in all areas: reading, mathematics, writing, and listening (Tables 12-15). In each case, the correlation with SES was highly significant,  $p < .01$  or  $p < .001$ . For reading and writing, moreover, SES was the sole predictor. This finding has also emerged in other studies and underlies funding formulas for federal remedial education programs, such as Title I. Research findings have shown a direct correlation between family income and test scores (Bracey, 1998; Jarolimek & Foster, 1997; Lake, et al., 1999; Locke, 1998; Mayer, 1997; Urban Issues Committee, et al., 1998).

In theory, moving from standardized tests to criterion-referenced measures of achievement should afford the historically low-achieving, low-SES students a better chance to succeed. In other words, tests like the WASL should narrow the achievement gap between low-SES, minority students and majority students.

Alternative assessments have not, however, narrowed the gap but may have increased it. Issues of cultural bias and fairness persist (Bond, 1995).

Although socioeconomic status (SES) of the student body was correlated with achievement on the WASL/4 and was found the best predictor of performance, the variable implies more than income or wealth. Other factors, related to SES, were at play. Wealth brings power, which parents can exert to claim educational benefits for their children, even at the expense of children from poorer families (Kohn, 1998; Wells & Serna, 1996). Also, more affluent parents may pay closer attention to the education of their children, investing both money and time in their children's lives and encouraging serious participation in academic and co-curricular activities (Mayer, 1997).

Ethnicity and achievement. The ethnicity variable added relatively small increments to the value of SES as a predictor for mathematics and listening skills. Ethnicity enhanced their respective coefficients of determination by only 7% (Tables 12 & 14). The predictive value of ethnicity was confirmed by minority student performance on the WASL/4. Statewide results from that assessment showed much lower scores for non-white students, except Asian/Pacific Islander students, in all 4 areas (Superintendent of Public Instruction, 1999).

In this study I found, however, that the ethnicity variable, defined as the percentage of white students, was a minor predictor. It trailed the SES predictor on mathematics and listening. Ethnicity, moreover, played no significant part in

predictions on reading and writing results. These findings should be anticipated, where sample schools were predominantly white (Table 5).

Enrollment and achievement. Enrollment, the measure of school size, played an even smaller part in predicting achievement on the WASL/4. As a predictor of mathematics performance, it added only 5% to the amount of variance on the criterion, which could be predicted by the combination of SES, ethnicity, and enrollment (Table 12). This finding was anticipated. Since the beginning of the current reform cycle in 1993, schools across Washington of every size have been engaged in restructuring efforts, spurred by mandatory and uniform assessment: the WASL/4. Theories and evidence about whether smaller or larger schools are more effective at making substantive changes notwithstanding, enrollment mattered only in mathematics.

#### Limitations of the Study

In this study I extended a research project conducted by Seattle Pacific University faculty and doctoral students, which focused on school restructuring in Washington State, subsequent to the enactment of HB 1209, the Education Reform Act of 1993. Because of limitations discussed below, caution is advised in the interpretation of findings and conclusions.

#### Design Limitations

Because of the correlation design, cause and effect relationships could be neither confirmed nor denied (Borg & Gall, 1989; Gravetter & Wallnau, 1995; Hinkle, et al., 1994). Although multiple correlations revealed statistically

significant and meaningful relationships, they could neither prove nor refute causality.

Stepwise multiple linear regression procedures, however, provided some predictive insights. These insights were particularly instructive on the relationship between the socioeconomic status of the student body and 4<sup>th</sup> grade student performance on the Washington Assessment of Student Learning. The test results, however, provided only a snapshot of achievement and not a picture of performance gains.

#### Questionnaire Limitations

Using the School Practices and Changes Questionnaire (SPCQ), researchers elicited responses from volunteer classroom teachers, who may have understood items in differing ways. These differences could have injected shades of meaning into the interpretation of items and responses, which could have influenced factor analysis and development of the construct for school restructuring adopted by this and associated studies. Although validated on its face and content, Section 5 of the SPCQ will require repeated use with other populations to ensure construct validity (Anastasi, 1988).

#### Participant Bias Limitations

The SPCQ was administered in several ways and settings, which could have affected participant willingness and interest in making thoughtful responses. Attitudes and energy levels during late afternoon staff meetings, for example, might have affected responses, particularly where teachers felt like members of a

captive audience. With 5 researchers collecting data in a strictly voluntary environment the quality of responses could vary greatly. This problem was partially addressed by excluding incomplete or unusable questionnaires.

#### Sample Limitations

The sample of 47 elementary schools was centered geographically within 4 Puget Sound counties: King, Kitsap, Pierce, and Snohomish. The 16 districts, their schools, and classroom teachers participated voluntarily. The benefits of random selection were, therefore, not available. Samples of convenience are, however, commonly used in the social sciences, including schools (Borg & Gall, 1989). In this case, the non-random selection of schools and the potential for respondent bias may further limit generalizations to the geographic region of the study or, more conservatively, to the school sample. On the other hand, WASL/4 results in this study were very close to statewide scores, suggesting that the selected sample represented the population of elementary schools.

#### Suggestions for Further Research

Suggestions for further research involve construct validation of the instrument, different school samples, additional variables, and replication. The same SPCQ data have been worked and reworked by several studies. To strengthen construct validity for the degree of school restructuring, Section 5 of the SPCQ should be administered to different teacher populations.

If the Superintendent of Public Instruction and/or the Washington State Legislature desire to sponsor or conduct research on the effects of post-1993

education reforms, they should find the SPCQ, particularly Section 5, quite helpful. The degree of school restructuring data alone could inform their policy decisions on program and staff development.

Relating the degree of school restructuring to performance variables should continue. Thus far, the construct for school restructuring has been compared with CTBS gain scores and with the results from a single administration of the WASL/4. If researchers desire a more complete understanding of the effects of restructuring on student achievement, additional SPCQ data should be gathered and compared with various measures of performance, whether the CTBS, the WASL, or other tests. During this process, gain score data on the WASL/4 should also be developed and related to the degree of school restructuring.

This study should be replicated with different populations, including schools at every grade level, in other regions of the state, and from urban, suburban, and rural areas. It is further recommended that future studies compare the degree of restructuring with WASL results at the 4<sup>th</sup>, 7<sup>th</sup>, and 10<sup>th</sup> grade on a longitudinal basis.

#### Summary and Concluding Remarks

In this study I explored relationships between the degree of restructuring in Western Washington elementary schools and the results on criterion-referenced tests administered in 1997 to 4<sup>th</sup> grade students in public schools, the WASL/4. The tests assessed performance in areas identified by the Washington State

Legislature as essential to academic success—reading, mathematics, writing, and the listening component of communications. In addition, I explored the relationships among the degree of school restructuring, student achievement, and 3 other variables commonly addressed in school research—the socioeconomic status of student body, student ethnicity, and school size.

In this study I found no statistically significant correlations between the degree of school restructuring and the socioeconomic status of the student body, ethnicity of the student body, or school size. A single significant correlation between the instructional enhancement scale of school restructuring and reading performance was found. Using multiple linear regression procedures, I found that the socioeconomic status of the student body was either the sole or the best predictor of achievement in reading, mathematics, writing, and listening. Ethnicity and enrollment added to predictability on mathematics, and ethnicity added to predictability on listening. Finally, the degree of school restructuring, as measured by the factors derived from Section 5 of the SPCQ, did not predict performance on the criterion-referenced tests.

Will restructuring initiatives make a significant difference in student achievement? The keen and on-going interest in finding positive relationships between educational reforms and student progress demands an affirmative answer: The results, unfortunately, remain mixed. Restructuring not only requires money for training, materials, and assessment, but also a great deal of hard work by practitioners. Reform activities conducted for objectives, which are

not centered on improved student learning, are wasteful of human and fiscal resources. Educational planning and program implementation must be directed toward learning outcomes. Continuing research can confirm direction and results or suggest more effective ways of thinking and teaching.

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APPENDIX A

School Practices and Changes Questionnaire (SPCQ)

## Seattle Pacific University

SCHOOL OF EDUCATION - INTERNATIONAL CENTER FOR CURRICULUM STUDIES

### SCHOOL PRACTICES AND CHANGES QUESTIONNAIRE

Thank you for participating in this research intended to evaluate the nature and extent of changes taking place in Washington schools. Your personal responses will be kept confidential.

#### Section 1: General and Demographic Information

School district: \_\_\_\_\_

Name of school: \_\_\_\_\_

Number of years you've taught at this school:

- less than 1 year
- 1 to 2 years
- more than 2, but less than 4 years
- 4 to 10 years
- more than 10 years

Teaching level:

- elementary       middle/jr. high       high school

Primary subject taught if secondary school: \_\_\_\_\_

Other subjects taught: \_\_\_\_\_

Total number of years teaching:

- less than 5 years     5 to 10 years     11 to 20 years     more than 20 years

Your age:

- 20-25       26-34       35-50       51+

Gender:

- male       female

Member of site-based council:

- yes       no       site-based council not operating

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## Section 2: Educational Practices Resulting from Restructuring

To the best of your knowledge which of the following have been implemented as **new practices** in your school since school restructuring was mandated in 1993? Circle the number that most closely matches your response.

	Uncertain	Used prior to restructuring mandates	No Implementation	Beginning Implementation	Moderate Implementation	Considerable Implementation
Increased graduation requirements	1	2	3	4	5	6
Recognition programs for effective teaching	1	2	3	4	5	6
Formal parental involvement program	1	2	3	4	5	6
Block scheduling or flexible time for courses	1	2	3	4	5	6
Emphasis on staff development activities	1	2	3	4	5	6
Site-based councils and decision making	1	2	3	4	5	6
Parent volunteer in the schools	1	2	3	4	5	6
Interdisciplinary teaching teams	1	2	3	4	5	6
Multi-aged groupings or classes	1	2	3	4	5	6
Cooperative learning focus	1	2	3	4	5	6
Independent study encouraged/allowed	1	2	3	4	5	6
Certificates of mastery developed	1	2	3	4	5	6
Non-graded programs or grouping	1	2	3	4	5	6
Outcome or performance based education	1	2	3	4	5	6
Total Quality Management principles used	1	2	3	4	5	6
School to work transition programs	1	2	3	4	5	6
Community involvement programs	1	2	3	4	5	6
Open enrollment	1	2	3	4	5	6
Inclusion practices	1	2	3	4	5	6
Schools within schools	1	2	3	4	5	6
Alternative assessment strategies	1	2	3	4	5	6

### Section 3: Restructuring and Classroom Changes

We are interested in determining if and how your teaching methods have changed in the last three years. Of the following classroom practices, which have declined in usage, remained about the same (including not being used at all previously), or increased in usage? Circle the number that is closest to your response.

	Uncertain	Declined in usage	No change or never used	Small increase in usage	Moderate increase in usage	Substantial increase in usage
Group projects	1	2	3	4	5	6
Use of textbooks	1	2	3	4	5	6
Cooperative learning	1	2	3	4	5	6
Lectures	1	2	3	4	5	6
Interdisciplinary teaming	1	2	3	4	5	6
Alternative assessment procedures	1	2	3	4	5	6
Interdisciplinary curriculum	1	2	3	4	5	6
Independent studies for students	1	2	3	4	5	6
Focus on higher order thinking skills	1	2	3	4	5	6
Heterogeneous grouping for instruction	1	2	3	4	5	6
Homogeneous grouping for instruction	1	2	3	4	5	6
Use of student portfolios for assessment	1	2	3	4	5	6
Teaming with another teacher	1	2	3	4	5	6
Use of, or reliance on educational technology	1	2	3	4	5	6
Curriculum alignment with instruction	1	2	3	4	5	6

### Section 4: Restructuring and Student Outcomes

In your opinion, how have the changes in school and classroom practices in the last three years affected student learning in the following areas?

	Uncertain	Learning has declined	No change	Small increase	Moderate increase	Substantial increase
Writing skills	1	2	3	4	5	6
Reading ability	1	2	3	4	5	6
Problem solving skills	1	2	3	4	5	6
Math skills	1	2	3	4	5	6
Specific content knowledge	1	2	3	4	5	6
Communication skills	1	2	3	4	5	6
Science	1	2	3	4	5	6
Art, drama and/or music	1	2	3	4	5	6
Social studies	1	2	3	4	5	6
PE/health	1	2	3	4	5	6

### Section 5: Teacher Perceptions

In 1993 the state legislature mandated that a variety of changes be made in Washington Schools. A wide range of educational practices have been or are being implemented under this "restructuring" mandate. Below are a series of questions pertaining to the restructuring efforts at your school. Please circle the number that most closely matches your response.

	Strongly disagree	Disagree	Somewhat disagree	Neutral or no opinion	Somewhat agree	Agree	Strongly agree
1 I feel that my input was relevant in the restructuring of my school.	1	2	3	4	5	6	7
2 I feel that I understand the reasons why my school has been restructuring.	1	2	3	4	5	6	7
3 I feel that parents understand why we restructured our school.	1	2	3	4	5	6	7
4 Parents and committee members were involved in our restructuring process.	1	2	3	4	5	6	7
5 Teacher leadership has been a key element in our restructuring effort.	1	2	3	4	5	6	7
6 Our restructuring effort has been conducted on the basis of clearly articulated goals.	1	2	3	4	5	6	7
7 The atmosphere in my classroom has improved as a result of restructuring.	1	2	3	4	5	6	7
8 I feel that I am able to use more innovative teaching methods as a result of the changes made in restructuring my school.	1	2	3	4	5	6	7
9 I have more time to concentrate on important teaching and learning issues as a result of restructuring.	1	2	3	4	5	6	7
10 The restructuring changes we have made in the last three years have changed what students are expected to learn and know.	1	2	3	4	5	6	7
11 Teachers are working together more to build a coherent, connected curriculum.	1	2	3	4	5	6	7
12 I think the changes brought about by our restructuring efforts will be lasting changes.	1	2	3	4	5	6	7
13 Restructuring has promoted a sense of learning beyond the walls of the school.	1	2	3	4	5	6	7
14 Our restructuring efforts have caused me to examine my own views of what constitutes a good education.	1	2	3	4	5	6	7
15 Students will be better prepared as a result of the changes made in restructuring this school.	1	2	3	4	5	6	7
16 I have more time to get to know my students as a result of restructuring.	1	2	3	4	5	6	7

APPENDIX B

School Practices and Changes Questionnaire (SPCQ):

Development and Technical Information

## The School Practices and Changes Questionnaire (SPCQ):

Development and Technical Information

Jeffrey T. Fouts

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#### Development of Sections 1-4 of the SPCQ

The School Practices and Changes Questionnaire (SPCQ) was developed in 1996-97 by a team of 7 researchers at Seattle Pacific University to assess the degree of school restructuring that has taken place in Washington schools since the passage of HB 1209 in 1993. To assess the degree of changes, the questionnaire asks for teachers' perceptions of how state mandated school reform efforts have affected their school, their classroom, their own teaching, and their students. The questionnaire consists of five sections: (1) general and demographic information; (2) new school wide practices (3) individual classroom changes; (4) affects of restructuring on student learning; and (5) teacher perceptions of the restructuring efforts.

In designing the first four sections of the questionnaire a review of the literature on school restructuring was conducted and from this literature the most common school and classroom practices associated with school restructuring were identified. From this master list the team of seven researchers reached agreement on 63 items to be included in the initial field test and the response format to be used. These 63 items and the response format were then field tested with a total of 23 elementary and secondary classroom teachers from various schools in Western Washington. In addition, these first four sections of the questionnaire were critiqued by two educational experts, a professor of educational administration and a practicing public school principal. Comments and suggestions from these sources were used to eliminate, combine, or revise items. The final version of the SPCQ contains 8 demographic and general information items, 21 school wide practice items, 15 classroom practice items, and 10 student learning items.

#### Development and Psychometric Information for Section 5 of the SPCQ

In addition to assessing the number and type of specific educational practices that are being used in Washington schools, we were also interested in understanding some of the more subtle changes and processes that taking place in the schools and classrooms, as well as the degree of satisfaction and confidence teachers have in the restructuring process and resulting changes. After a second literature review and consideration of numerous theoretical models of school restructuring efforts, procedures, and desired outcomes, an initial list of 119 statements to which teachers could respond on a strongly agree/strongly disagree format were developed. These 119 statements were then reduced to 95 statements and administered to a total of 22 secondary and elementary teachers in Western Washington. Feedback from these teachers were used to rephrase or alter items for clarity, and at this point, all 95 items were retained for inclusion in a larger field test.

Questionnaires containing the 95 items in Likert response format were administered to 226 public elementary and secondary teachers in Western Washington. Of the 226 questionnaires administered, 7 were eliminated because of incomplete or patterned responses or because the questionnaire was completed by someone of than a regular classroom teacher. This resulted in a usable sample of 219 questionnaires.

Analysis of the teachers' responses on the 95 items was for the intent of reducing the total number of items, and to identify constructs useful in evaluating the restructuring efforts. The first step in reducing the number of items was to eliminate all those items that had a .5 or lower item-total correlation. Eighteen items from the questionnaire were eliminated with this procedure. The remaining 77 items were then analyzed by both principal components and principal axis factor analysis procedures. The most satisfactory factor solution was obtained using the principal components method with varimax rotation, resulting in three factors and 16 total items. The cumulative percentage of the three factors accounts for 64.7 percent of the common variance. Factor 1 has six items and accounts for 23.4% of the variance. Factor 2 has 6 items and accounts for 22.5% of the variance. Factor 3 has 4 items and accounts for 18.8% of the variance. Alpha reliability for the entire 16 items on section 5 of the SPCQ is .92. Alpha reliability for Factor 1, Factor 2, and Factor 3 is each .87. The rotated factor loadings are presented in Table 1.

Table 1  
Section 5 of the School Practices and Changes Questionnaire  
16 Items and Factor Loadings

Section 5 Item	Loadings		
	Factor 1	Factor 2	Factor 3
<b>Factor 1—Collaboration Scale</b>			
I feel that parents understand why we restructured our school.	.78		
Teacher leadership has been a key element in our restructuring effort.	.76	.32	
Our restructuring effort has been conducted on the basis of clearly articulated goals.	.72		
I feel that my input was relevant in the restructuring of my school.	.71		
Parents and committee members were involved in our restructuring process.	.70		
I feel that I understand the reasons why my school has been restructuring.	.66		

Table 1 (cont.)

Section 5 Item	Factor 1	Factor 2	Factor 3
<b>Factor 2—Fundamental Change Scale</b>			
Students will be better prepared as a result of the changes made in restructuring this school.	.33	.78	
Restructuring has promoted a sense of learning beyond the walls of the school.		.76	
The restructuring changes we have made in the last three years have changed what students are expected to learn and know.		.73	
I think the changes brought about by our restructuring efforts will be lasting changes.	.41	.71	
Teachers are working together more to build a coherent, connected curriculum.		.71	
Our restructuring efforts have caused me to examine my own views of what constitutes a good education.		.62	.33
<b>Factor 3—Instructional Enhancement Scale</b>			
The atmosphere in my classroom has improved as a result of restructuring.			.80
I have more time to get to know my students as a result of restructuring.			.79
I have more time to concentrate on important teaching and learning issues as a result of restructuring.			.78
I feel that I am able to use more innovative teaching methods as a result of the changes made in restructuring my school.			.77

The six items loading on Factor 1 center on the participation in the decision-making process by teachers and parents, and that there were clear reasons and goals known to all participants as to why restructuring was taking place. This construct appears to be very similar to one of the perspectives on restructuring articulated by Ellis and Fouts (1994). They identify the energizing forces behind restructuring and describe two opposing models, one Goal-Driven/Participatory and the other Arbitrary/Mandated. The former model is inclusive and change driven by focused and agreed-upon goals by all interested parties. The latter model is change by top-down mandates independent of agreed-upon needs, and seen as arbitrary or random in nature. Ellis and Fouts theorize that the Goal-Driven/Participatory model produces changes in schools that are most likely to be meaningful and long-lasting. The six items loading on Factor 1 closely reflect this Goal-Driven/Participatory idea. This factor has been named the *Collaboration Scale*.

The six items loading on Factor 2 appear to center on the degree to which restructuring efforts have, will, or will continue, to lead to a qualitatively different education for students. This construct appears to be very similar to a second perspective on restructuring articulated by Ellis and Fouts (1994). They differentiate between the outcomes of educational change that lead to alterations in the school bureaucracy and outward structure of the school, and change that leads to a qualitatively different educational experience for the student. These two types of changes they call Bureaucratic/Centralized restructuring and Authentic/Fundamental restructuring. Bureaucratic/Centralized restructuring involves changes in the time schedule, school calendar, administration and decision-making processes, and other outward visible structural changes. However, these types of changes do not necessarily mean that students are learning anything differently than before. Authentic/Fundamental restructuring, on the other hand, are changes that "flow from the very essence of education," and are changes that make a qualitative difference in what and how students are expected to learn. This type of change may be accompanied by changes in the bureaucracy or structure of schools, but those changes alone do not assure that Authentic/Fundamental restructuring has taken place. Items loading on Factor 2 ask teachers the degree to which restructuring has led to this type of Authentic/Fundamental change. This factor has been named the *Fundamental Change Scale*.

The four items loading on Factor 3 are concerned with the degree to which restructuring efforts have improved the classroom environment and instruction. This factor has been named the *Instructional Enhancement Scale*.

The SCPQ scale intercorrelations are presented in Table 2. These moderate correlations indicate that the scales measure related dimensions of teachers' perceptions about school restructuring. If enhanced collaboration, enhanced instructional and environmental classroom conditions, and fundamental changes in what and how much students learn are desirable goals for educational restructuring, then the composite of these three scales may be seen as an indication of the overall general attitude or satisfaction teachers have about the restructuring that has taken place in their schools. This total mean score for the sixteen items of Section 5 of the SCPQ is the *Overall Teacher Satisfaction* score.

Table 2  
SCPQ Scale Intercorrelations

Scale	Collaboration	Fundamental Change
Collaboration		
Fundamental Change	.58	
Instructional Enhancement	.56	.54

Interpreting scale and Overall Teacher Satisfaction scores. For section 5 of the SPCQ the response range is from 1 to 7, with 7 being strongly agree with the statement and 1 being strongly disagree. The response 4 is neutral or no opinion. Generally, for the Collaboration, Fundamental Change and Instructional Enhancement scales, a mean score above 4.0 represents a positive view of the affects of restructuring in that area and a mean score of below 4.0 represents a negative view. In addition, scale item response distributions may be examined individually to understand further the teachers' perceptions. For Overall Teacher Satisfaction, a mean score above 4.0 represents an overall satisfaction with the affects of restructuring and a mean score of below 4.0 represents an overall negative view and dissatisfaction.

#### Reference

- Ellis, E.A. & Fouts, J.-T. (1994). *Research on School Restructuring*. Larchmont, NY: Eye on Education.