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ABSTRACT

This packet contains a research synthesis and a collection of six research briefs. The research synthesis, "Effective Schooling Practices: A Research Synthesis, 1995 Update" (Kathleen Cotton), is the third edition of a research-synthesis document on effective schooling practices. It was originally used to support schools receiving training in Northwest Regional Educational Laboratory's (NWREL's) Onward to Excellence (OTE) school-improvement process. Based on over 1,000 references, the synthesis describes characteristics and practices identified by research as associated with improvements in student performance. Findings are cited within three sections, each focused on one level of organization: the classroom, the school, and the district. Groups of practices derived from the research have been organized into practice clusters and then into cluster groupings. The six research briefs published by NWREL are as follows: (1) "Reducing the Dropout Rate" (E. Gregory Woods); (2) "Peer and Cross-Age Tutoring" (Page Kalkowski); (3) "Engendering School Improvement Through Strong Instructional Leadership" (E. Gregory Woods); (4) "Promoting Student Mathematics Learning Through a Hands-on and Visual Math Program" (Joan M. Shaughnessy); (5) "Applying Total Quality Management Principals to Secondary Education" (Kathleen Cotton); and (6) "Preparing High School Students for the World of Work in a Tech Prep Program" (Joan M. Shaughnessy). (LMI)

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SCHOOL IMPROVEMENT RESEARCH SERIES

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1994-95

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3. CLOSE-UP #18	Peer and Cross-Age Tutoring
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March 1995

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Onward to Excellence

Effective Schooling Practices: A Research Synthesis 1995 Update

Kathleen Cotton

Introduction

This is the third edition of a research synthesis document that was first published by the Northwest Regional Educational Laboratory (NWREL) in 1984 and updated in 1990. This edition reflects educational research literature published within the past five years, together with inquiries into topical areas not investigated previously. Like its predecessors, this synthesis cites classroom, school, and district practices that research has shown to foster positive student achievement, attitudes, and social behavior.

The 1984 synthesis featured findings from the now-classic "school effectiveness" research conducted in the 1970s and early 1980s. That research studied effective and ineffective schools and classrooms with similar student populations and identified key differences in their organization, management, curriculum, and instruction.

The 1990 synthesis update retained that information, adding refinements to those earlier findings and results from other areas of investigation, such as questioning strategies, high-needs populations, and professional development for teachers.

This 1995 update augments previous work by identifying (1) additional findings in familiar topical areas and (2) findings on topics of more recent research interest. Among these newer areas of focus are:

- Curriculum integration
- Alternative assessment
- School-based management
- Prevention of substance abuse, dropping out, and social disruption
- Social and academic resiliency
- Higher-level thinking skills
- Attitudes and skills for workplace readiness
- Intercultural relations and multicultural learning.

Inevitably, the revision process also required the deletion of many bibliographic citations that appeared in the earlier versions in order to create space for newer entries. In culling the bibliography, we have attempted to retain classic and seminal reports, while removing many older, less rigorous, redundant, or difficult-to-find items.

The result of this work is that the assertions made in this synthesis are supported by more than 1,000 of the highest-quality and most useful studies and summaries available.

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School, Community and Professional Development Program

History

Originally, the synthesis was intended primarily as a support piece for schools receiving training in NWREL's *Onward to Excellence* (OTE) school improvement process. Staff of these schools—now numbering approximately 2,000 across the U.S.—have used the synthesis to identify research-based practices that relate to the improvement goals they have set. They then plan, implement, and monitor the use of these practices, drawing upon additional research and the experience of others who have pursued similar goals.

Today, OTE is the best-known and one of the most highly regarded approaches to school improvement in the nation. OTE's success is due largely to (1) its insistence that educational improvement efforts be research based and (2) its provision of a resource—this synthesis and its predecessors—that makes it feasible for busy school personnel to access and use research.

The widespread, successful use of the syntheses in OTE schools is, of course, very gratifying. Its use, however, has expanded considerably beyond this initial application. The synthesis is also disseminated through NWREL's School Improvement Research Series (SIRS), a growing collection of research summaries and related articles distributed on either a single-purchase or subscription basis. As this edition of the synthesis goes to press, the combined sales of the first two editions total nearly 100,000 copies.

Participants in NWREL's more recently developed district-level strategic improvement process, *Creating the Future*, are also making use of the synthesis, a practice that can be expected to increase with the growth of that program. Large but undocumented numbers of complimentary copies have been distributed to NWREL's clients and colleagues over the years. And finally, the synthesis has been available since 1990 through the Educational Resources Information Center (ERIC) system (ED 347 613).

The Effective Schooling Research

The evidence that supports the assertions made in this synthesis come from several different kinds of research investigations. They include:

- **School effects research**: Studies of whole schools undertaken to identify schoolwide practices that help students learn
- **Teacher effects research**: Studies of teachers and students in the classroom to discover effective practices
- **Research on instructional leadership**: Studies of principals and other building leaders to determine what they do to support teaching and learning
- **Curriculum alignment and curriculum integration research**: Examinations of alternative methods of organizing and managing curriculum to determine effective approaches
- **Program coupling research**: Inquiries into the interrelationships among practices used at the district, school building and classroom levels
- **Research on educational change**: Studies to identify conditions and practices that promote significant, durable change in educational programs.

Taken as a whole, the findings from research in these areas provide a broad and integrated picture of effective schooling practices. However, while the research in some areas (teacher effects, for example) is plentiful, of high quality, and quite consistent, the research base in other areas (such as program coupling) is smaller and more difficult to link to particular student outcomes. Consequently, the assertions about effective schooling made in this document cannot be entirely conclusive. Still, the evidence in support of these assertions is strong and

continues to become stronger as contemporary researchers add to and confirm the findings of earlier research.

How to Use the Synthesis

This research synthesis describes characteristics and practices identified by research as associated with improvements in student performance. Findings are cited within three sections, each focused on one level of organization: the classroom, the school, and the district. Groups of practices derived from the research have been organized into *practice clusters* (such as "Teachers Use a Preplanned Curriculum to Guide Instruction") and then into *cluster groupings* (such as "Instruction" and "Assessment").

At the end of each practice cluster are lists of sources from the research base which support the practices cited in that cluster. While these are not inclusive of all the reports reviewed in that topic area, they are of high quality, representative of the research base, relatively easy to retrieve, and therefore likely to be useful to those wanting to pursue a given topic in more detail. Full citations may be found in the bibliography at the end of this publication.

The findings summarized here will be of interest to persons exploring or involved in school improvement and restructuring efforts. The synthesis can stimulate discussion of instructional issues, guide the development of appropriate local improvements, and aid in decision making as school improvements take place. When integrated into a locally determined plan for action, these practices can be of significant assistance in the improvement of schools.

A word of caution: This booklet cannot legitimately be utilized as a checklist or instrument for evaluating the performance of individual teachers or principals, nor should it be used as a blueprint for local school improvement. It is not a simple recipe for school improvement, nor is it, in and of itself, a staff development program or a program for supervision.

The experience of those involved in OTE and other school improvement efforts does demonstrate, however, that the findings presented here are useful in helping to develop and actualize school improvement projects that bring about real change for the better. Research and experience both offer the clear and optimistic message that schools do make a difference and that, with an appropriate concentration of will and effort, teachers and administrators can substantially influence student success.

We suggest that readers review the research findings reported here and, based on local decisions and needs, use these findings to formulate processes that can lead to attainment of school goals.

How to Access the Research

Use of the research synthesis frequently leads readers to want to acquire materials identified in the bibliography. While we at NWREL are not able to provide these documents, we have taken steps to make it easier for users to locate them.

This edition of the synthesis provides the most complete bibliographic information possible for each source cited, including journal volumes, numbers, months and years. ED numbers are provided for documents available through the ERIC system, and most hard-to-find or "fugitive" citations have been deleted. Finally, those items cited at the end of each practice cluster in the synthesis text have been selected partly for ease of access, and most can readily be retrieved at a county, university, or other well-stocked library.

Journal Articles and Books. These libraries, for example, should have many of the educational journals in which the articles in this bibliography appear. Local library staff can assist users to locate articles from these journals. Articles from journals the local library does not have can often be retrieved through interlibrary loan. Likewise, books cited in the bibliography can either be borrowed from the library or, for users who wish to acquire their own copies, can generally be found,

along with price and ordering information, in *Books in Print*. School-based users are encouraged to contact their instructional media specialists for assistance in retrieving resources.

ERIC Documents. Citations that conclude with an ED number—the letters "ED" followed by six digits—in parentheses refer to materials that have been photocopied and miniaturized on microfiche by ERIC staff. Local librarians can help readers locate the nearest ERIC microfiche collection.

Most documents can also be ordered, in either microfiche or hard-copy form, from: ERIC Document Reproduction Service, DynTel Corporation, 7420 Fullerton Road, Suite 110, Springfield, VA 22153-2852, 1-800-443-ERIC. Costs: Paper copy—$3.85 for each 25 pages or part thereof; Microfiche (each containing 96 pages)—$0.25 each.

SIRS Materials. Some citations in this bibliography refer to "Close-Ups" and "Topical Syntheses" developed at NWREL. These articles are from NWREL's School Improvement Research Series (SIRS), of which this synthesis is also a part. Hard copy of the different "series" of SIRS materials are available for purchase from NWREL's Document Reproduction Service (contact information below), and some of them are also in the ERIC system. Finally, they are available on the Internet via the NWREL Gopher at

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gopher://gopher.nwrel.org/11/
programs/scpd/sirs
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or on the World Wide Web at

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http://www.nwrel.org/scpd/
sirshome.html
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Additions to the SIRS materials on the Internet will be made as new documents are published.

Further Information and Ordering

NWREL's School, Community and Professional Development Program (SCPD) has developed the *Onward to Excellence* process referenced above for use by local schools in applying effective schooling research results to meet school improvement goals. *Creating the Future*, a program for district-level strategic improvement, is also being used profitably in the Northwest region and elsewhere to improve student performance. For further information about these programs or about the School Improvement Research Series, contact:

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Acknowledgments

The original 1984 *Effective Schooling Practices: A Research Synthesis* was developed by School, Community and Professional Development Program director, **Robert E. Blum**, and former staff members **Jocelyn A. Butler** and **Ronald Smith**. SCPD research specialist **Kathleen Cotton** prepared both the 1990 and 1995 editions.

Eminent researchers from across the country, *Onward to Excellence* and *Creating the Future* trainers, and other education professionals provided much valuable input for updating this publication.

Researchers who provided conceptual and resource suggestions include: **Jerry D. Bamburg** of the University of Washington, **Douglas Carnine** of the University of Oregon, **S. Alan Cohen** of the University of San Francisco, **Harris M. Cooper** of the University of Missouri-Columbia, **H. Dickson Corbett** of Research for Better Schools in Philadelphia, **Carolyn Evertson** of Vanderbilt University, **Michael Fullan** of the University of Toronto, **Mark Gall** of the University of Oregon, **Russell Gersten** of the Eugene (Oregon) Research Institute, **Allan Glatthorn** of East Carolina University, **Shirley M. Hord** of the Southwest Educational Development Laboratory in Austin, Texas, **Kenneth Leithwood** of the Ontario Institute for Studies in Education, **Daniel U. Levine** of the University of Nebraska, **Lawrence Lezotte** of Effective Schools Products in Okemos, Michigan, **Peter Mortimore** and **Louise Stoll** of the University of London (England), **Joseph Murphy** of Vanderbilt University, **Barbara Nelson Pavan** of Temple University, **Barak Rosenshine** of the University of Illinois at Champaign, and **Robert E. Slavin** of Johns Hopkins University.

Onward to Excellence and *Creating the Future* trainers who reviewed and provided feedback for this publication include **Dave Curry** of the Linn-Benton-Lincoln (Oregon) Education Service District, **John Deeder** of the Reynolds School District (Oregon), and **Dean Thompson** of the Umatilla (Oregon) Education Service District.

NWREL staff members, some of whom are also OTE or CTF trainers, also provided valuable suggestions for this synthesis update. Those who furnished conceptual and resource ideas include: NWREL executive director, **Bob Rath; Bob Blum, Sandy Mossman, Nancey Olson,** and **Ken Servas** of the School, Community and Professional Development Program; **Carlos Sundermann** and **Randy Collver** of the Western Regional Center for Drug-Free Schools and Communities; **Joyce Harris, Janet Freeman, Carole Hunt, Nancy Huppertz**, and **Barbara Warren-Sams** of the Center for National Origin, Race, and Sex Equity; **Tom Owens** of the Education and Work Program; **Steve Nelson** of the Rural Education Program; **Don Holznagel** of the Technology Program; **Patrick Weasel Head** of the Indian Education Program; **Joan Shaughnessy** of the Evaluation and Assessment Program; and **Amy Derby** of the Science and Mathematics Education Program.

Other NWREL staff whose contributions merit acknowledgment here include: **Linda Gipe** for her work in design, layout, proofreading, and production; Library/Information Center director **Maggie Rogers** and assistant **Linda Fitch** for their extensive and tireless reference work; **Patricia Hogan** for her bibliographic research; and **Karen Risch** and **Eugene Story** for their proofreading assistance.

Table of Contents

1. CLASSROOM CHARACTERISTICS AND PRACTICES

Teachers and students work together over time to extend and refine each learner's knowledge and skills. Through careful preplanning, effective classroom management and instruction, positive teacher-student interactions, attention to equity issues, and regular assessment, teachers and students can achieve success.

1.1 PLANNING AND LEARNING GOALS

1.1.1 Teachers Use a Preplanned Curriculum to Guide Instruction.

Teachers:

a. Develop and prioritize learning goals and objectives based on district and building guidelines. sequence them to facilitate student learning, and organize them into units or lessons.
b. Establish timelines for unit or lesson objectives so they can use the calendar for instructional planning.
c. Identify instructional resources and teaching activities, match them to objectives and student developmental levels, and record them in lesson plans.
d. Identify alternative resources and activities, especially for priority objectives.
e. Review resources and teaching activities for content and appropriateness and modify them as needed to increase their effectiveness in helping students learn.
f. Arrange daily, weekly, monthly, and yearly activities on the calendar to assure that resources are available and instructional time is used wisely.

Behr and Bachelor (1981); Brophy and Good (1986); Byra and Coulon (1994); Callaway (1988); Denham and Lieberman (1980); Edmonds (1979a,b); Glatthorn (1993); Kallison (1986); Leithwood and Montgomery (1982, 1985); Mortimor , et al. (1988); Mortimore and Sammons (1987); Rosenshine (1976, 1983); Rosenshine and Stevens (1986); Sammons, Hillman, and Mortimore (1994); Sarason (1971); Shann (1990); Stallings (1985a, 1986); Venezky and Winfield (1979)

1.1.2 Teachers Provide Instruction that Integrates Traditional School Subjects, As Appropriate.

Teachers:

a. Use thematic units as the organizing principles for instruction in agreed-upon areas.
b. Include student input when determining themes around which to organize instruction.
c. Engage students in projects requiring knowledge and skill across several traditional content areas.
d. Make use of other resources, including hands-on materials, in addition to textbooks.
e. Organize themselves into teams to plan and deliver instruction.
f. Use performance assessments that allow students to demonstrate knowledge and skills from several traditional subject-matter areas.

Aschbacher (1991); Brophy and Alleman (1991); Friend (1985); Greene (1991); Henderson and Landesman (1992); Hough (1994); Ladewig (1987); Lake (1994); Lee and Smith (1993); Levitan (1991); MacIver (1990); Mansfield (1989); Martinez (1992); Meckler (1992); Smith, Johnson, and Rhodes (1993); Vars (1987); Vye (1990); Willett (1992); Williams, D. (1991)

1.2 CLASSROOM MANAGEMENT AND ORGANIZATION

1.2.1 Teachers Form Instructional Groups That Fit Students' Academic and Affective Needs.

Teachers:

a. Use whole group instruction when introducing new concepts and skills.
b. Form smaller groups as needed to make sure all students learn thoroughly. They place students according to individual achievement levels for short-term learning activities; they avoid underplacement.
c. Monitor their instructional approaches, so that students in lower groups still receive high-quality instruction.
d. Review and adjust groups often, moving students when achievement levels change.
e. Form small groups for instruction and practice in the use of higher-order thinking skills.
f. Make use of heterogeneous cooperative learning groups, structuring these so that there are both group rewards and individual accountability.
g. Set up peer tutoring and peer evaluation groups to use time effectively and to ensure that students receive the assistance they need to learn successfully.
h. Ensure that learning groups exhibit gender, cultural, ability-disability, and socioeconomic balance.

Bossert (1985, 1988a); Calfee and Brown (1979); Cohen, E. C. (1986); DiPardo and Freedman (1988); Fantuzzo, et al. (1989); Fielding and Pearson (1994); Garcia, E. E. (1990); Glatthorn (1989); Hallinan (1984); Hawkins, Doueck, and Lishner (1988); Johnson, Johnson, and Scott (1978); Johnson, et al. (1981); Katstra, Tollefson, and Gilbert (1987); Lazarowitz, et al. (1988); Lumpkins, Parker, and Hall (1991); Madden, et al. (1993); Medley (1979); Rosenshine (1979, 1983); Rosenshine and Stevens (1986); Shann (1990); Sindelar, et al. (1984); Slavin (1987a, 1988a, 1989a, 1989-90, 1991, 1994); Sorensen and Hallinan (1986); Stallings (1985); Webb (1980)

1.2.2 Teachers Make Efficient Use of Learning Time.

Teachers:

a. Allocate time to different content areas based on district and school goals.
b. Keep noninstructional time to a minimum by beginning and ending lessons on time, keeping transition times short, and managing classrooms so as to minimize disruptive behavior.
c. Set and maintain a brisk pace for instruction that remains consistent with thorough learning. They introduce new objectives quickly, and provide clear start and stop cues to pace lessons according to specific time targets.
d Ask focused questions, provide immediate feedback and correctives, and engage students in discussion and review of learning material.
e. Maintain awareness of the rest of the class when working with individuals or small groups and take action as necessary to keep all students on task.
f. Present learning activities at a level that is neither too easy nor too difficult for the majority of students, making adaptations to serve the needs of faster and slower learners.
g. Keep seatwork activities productive through careful preparation, active supervision, and provision of assistance to students in such a way that others are not disturbed.
h. Encourage students to pace themselves. If students do not finish during class, teachers request that they work on lessons before or after school, during lunch or at other times so they keep up with what is going on in class.
i. Work with slower learners to reduce the amount of time needed for learning, e.g., by teaching them effective study skills, mnemonic devices, etc.
j. Give short homework assignments to elementary students to build good study habits and longer (45-120-minute) assignments to secondary students to reinforce

learning. They check homework for completion and to diagnose learning needs, but do not generally assign grades.

Anderson, L. W. (1980, 1985); Berliner (1979); Bielefeldt (1990); Brookover and Lezotte (1979); Brophy (1986a,b); Brophy and Good (1986); Brown and Saks (1986); Butler (1987); Cooper (1989); Denham and Lieberman (1980); Evertson (1985, 1989); Evertson and Harris (1992); Gall, et al. (1990); Gettinger (1989); Good (1984); Hawley, et al. (1984); Helmke and Schrader (1988); Karweit (1984, 1985); Knorr (1981); Kulik and Kulik (1988); Levine and Lezotte (1990); McGarity and Butts (1984); Rosenshine (1978, 1979, 1983); Sammons, Hillman, and Mortimore (1994); Slavin (1994a); Strother (1985); Stallings (1980); Teddlie, Kirby, and Stringfield (1989); Walberg (1988); Walberg, et al. (1985); Wang, Haertel, and Walberg (1993-1994); Wyne and Stuck (1979)

1.2.3 Teachers Establish Smooth, Efficient Classroom Routines.

Teachers:

a. Plan rules and procedures before the school year begins and present them to students during the first few days of school.
b. Begin class quickly and purposefully, with assignments, activities, materials and supplies ready for students when they arrive.
c. Require students to bring the materials they need to class each day and assign storage space as needed.
d. Establish routines for handling administrative matters quickly and efficiently, with minimum disruption of instructional time.
e. Make smooth, rapid transitions between activities throughout the class period or school day.
f. Circulate around the room during seatwork activities, keeping students on task and providing help as needed.
g. Conduct periodic review of classroom routines and revise them as needed.

Allen, J. D. (1986); Anderson, L. M., et al. (1980); Armor, et al. (1976); Bain, Lintz, and Word (1989); Bielefeldt (1990); Brophy (1979; 1986); Brophy (1983a); Brophy and Good (1986); Brown, McIntyre, and McAlpine (1988); Doyle (1986); Edmonds (1979a); Emmer, et al. (1980a,b, 1982); Evertson (1982a,b, 1985); Evertson and Harris (1992); Evertson, et al. (1982, 1985); Gersten and Carnine (1986); Good and Brophy (1986); Hawkins, Doueck, and Lishner (1988); Hawley, et al. (1984); Kounin (1977); Leinhardt, Weidman, and Hammond (1987); Medley (1979); Rosenshine (1983); Rosenshine and Stevens (1986); Sanford, Emmer, and Clements (1983); Sanford and Evertson (1981); Wang, Haertel, and Walberg (1993-1994)

1.2.4 Teachers Set Clear Standards for Classroom Behavior and Apply Them Fairly and Consistently.

Teachers:

a. Set standards which are consistent with or identical to the building code of conduct.
b. Let students know that there are high standards for behavior in the classroom, and explain rules, discipline procedures, and consequences clearly.
c. Provide written behavior standards and teach and review them from the beginning of the year or the start of new courses.
d. Establish rules that are clear and specific; they avoid vague or unenforceable rules such as "be in the right place at the right time."
e. Provide considerable reteaching and practice of classroom rules and procedures for children in grades K-3.
f. Involve older students in helping to establish standards and sanctions.
g. Apply consistent, equitable discipline for all students, making certain that sanctions are clearly linked to students' inappropriate behavior.
h. Teach and reinforce positive, prosocial behaviors and skills, including self-control skills, especially with students who have a history of behavior problems.
i. Stop disruptions quickly, taking care to avoid disrupting the whole class.

j. Focus on students' inappropriate behavior when taking disciplinary action—not on their personalities or histories.
k. Handle most disciplinary matters in the classroom, keeping referrals to administrators to a minimum.
l. Participate in training activities to improve classroom management skills.

Allen, J. D. (1986); Anderson, L. M. (1980); Bain, Lintz, and Word (1989); Bielefeldt (1990); Brophy (1979, 1983a, 1986a); Brophy and Good (1986); CEDaR/PDK (1985); Cotton (1990b); Doyle (1986); Emmer and Evertson (1981a,b); Emmer and Aussiker (1989); Emmer, et al. (1982); Evertson (1985, 1989); Evertson and Harris (1992); Gettinger (1988); Good and Brophy (1986); Gottfredson, Gottfredson, and Hybl (1993); Hawkins, Doueck, and Lishner (1988); Kounin (1977); Leming (1993); Mayer (1993); Medley (1978); Render, Padilla, and Krank (1989); Rutter, et al. (1979); Sanford and Evertson (1981); Solomon, et al. (1988); Teddlie, Kirby, and Stringfield (1989); Vincenzi and Ayrer (1985)

1.3 INSTRUCTION

1.3.1 Teachers Carefully Orient Students to Lessons.

Teachers:
a. Communicate enthusiasm for learning.
b. Help students get ready to learn. They explain lesson objectives in simple, everyday language and refer to them throughout lessons to maintain focus.
c. Post or hand out learning objectives to help students keep a sense of direction and check periodically to assure that objectives are understood.
d. Explain the relationship of a current lesson to previous study, calling attention to key concepts or skills previously covered.
e. Arouse students' interest and curiosity about the lesson content by relating it to things of personal relevance to them.
f. Challenge and inspire students to learn, particularly at the start of difficult lessons. They make certain that students know in advance what's expected and are ready to learn.
g. Use techniques such as advance organizers, study questions, and prediction to prepare students for learning activities.
h. Make students aware that they are expected to contribute to classroom discussions and other participatory activities.

Block and Burns (1976); Bloom (1976); Brophy (1987); Brophy and Good (1986); Evertson (1986); Gersten and Carnine (1986); Good (1984); Good and Grouws (1979 a,b); Kooy (1992); Lumpkins, Parker, and Hall (1991); McGinley and Denner (1985); Mitchell (1987); Porter and Brophy (1988); Rosenshine (1976, 1983); Rosenshine and Stevens (1986); Slavin (1994); Snapp and Glover (1990); Stahl and Clark (1987); Stallings (1985c); Streeter (1986); Tomic (1989); Weade and Evertson (1988)

1.3.2 Teachers Provide Clear and Focused Instruction.

Teachers:
a. Review lesson activities, give clear written and verbal directions, emphasize key points and instructions, and check students' understanding.
b. Give lectures and demonstrations in a clear and focused manner, avoiding digressions.
c. Take note of learning style differences among students, and, when feasible, identify and use learning strategies and materials that are appropriate to different styles.
d. Give students plenty of opportunity for guided and independent practice with new concepts and skills.
e. Provide instruction in strategies for learning and remembering/applying what they have learned, as well as instruction in test-taking skills.
f. Use validated strategies to develop students' higher-level thinking skills.

g. Select problems and other academic tasks that are well matched to lesson content so student success rate is high. They also provide varied and challenging seatwork activities.
h. Provide computer-assisted instructional activities which supplement and are integrated with teacher-directed learning.

Bain, Lintz, and Word (1989); Bennett (1991); Brophy (1979); Brophy and Good (1986); Chilcoat (1989); Corno and Snow (1986); Crawford, et al. (1975); Dunn (1984); Evertson (1989); Gall, et al. (1990); Gersten, et al. (1984); Gersten and Carnine (1986); Gleason, Carnine, and Boriero (1990); Good and Grouws (1977; 1979a,b); Haller, Child, and Walberg (1988); Kulik and Kulik (1987); Levine (1982); Levine and Stark (1982); Madden, et al. (1993); Medley (1978); Metcalf and Cruickshank (1991); Mevarech and Rich (1985); Nickerson (1988); Okey (1985); Paradise and Block (1984); Paris, Oka, and DeBritto (1983); Porter and Brophy (1988); Rosenshine (1979, 1983); Rosenshine and Stevens (1986); Rutter, et al. (1979); Samson (1985); Saracho (1984); Scruggs, White, and Bennion (1986); Slavin (1994a); Snyder, et al. (1991); Stallings (1985a); Stennett (1985); Wang, Haertel, and Walberg (1993-1994); Waxman, et al. (1985); Weade and Evertson (1988); Weinstein and Meyer (1986); Weinstein, C. E., et al. (1988-1989); Woodward, Carnine, and Gersten (1988)

1.3.3 Teachers Routinely Provide Students Feedback and Reinforcement Regarding Their Learning Progress.

Teachers:
a. Give students immediate feedback on their in-class responses and written assignments to help them understand and correct errors.
b. Acknowledge correct responses during recitations and on assignments and tests.
c. Relate the specific feedback they give to unit goals or overall course goals.
d. Give praise and other verbal reinforcements for correct answers and for progress in relation to past performance; however, teachers use praise sparingly and avoid the use of unmerited or random praise.
e. Make use of peer evaluation techniques (e.g., in written composition) as a means of providing feedback and guidance to students.
f. Provide computer-assisted instructional activities that give students immediate feedback regarding their learning performance.
g. Assign homework regularly to students in grade four and above and see that it is corrected and returned promptly—either in class by the students or by the teacher.
h. Train students to provide each other feedback and reinforcement during peer tutoring activities.

Brophy (1980, 1987); Brophy and Good (1986); Broughton (1978); Cannella (1986); Cohen, Kulik, and Kulik (1982); DiPardo and Freedman (1988); Gettinger (1983); Gorrell and Keel (1986); Gottfried and Gottfried (1991); Hawkins, Doueck, and Lishner (1988); Hawley, et al. (1984); Kastra, Tollefson, and Gilbert (1987); Kearns (1988); Kulik and Kulik (1987, 1988); Lysakowski and Walberg (1981); Madden, et al. (1993); Mortimore, et al. (1988); Page (1992); Porter and Brophy (1988); Rosenshine and Stevens (1986); Rupe (1986); Sammons, Hillman, and Mortimore (1994); Schunk (1983, 1984); Schunk and Swartz (1993); Slavin (1979a,b); Stennett (1985); Stevens (1985); Teddlie, Kirby, and Stringfield (1989); Tenenbaum and Goldring (1989)

1.3.4 Teachers Review and Reteach as Necessary to Help All Students Master Learning Material.

Teachers:
a. Introduce new learning material as quickly as possible at the beginning of the year or course, with a minimum of review or reteaching of previous content. They review key concepts and skills thoroughly but quickly.
b. Use different materials and examples for reteaching than those used for initial instruction; reteaching is more than a "rehash" of previously taught lessons.
c. Reteach priority lesson content until students show they've learned it.

d. Provide regular, focused reviews of key concepts and skills throughout the year to check on and strengthen student understanding.
e. Select computer-assisted instructional activities that include review and reinforcement components.
f. Address learning style differences during review and reteaching.

Bain, Lintz, and Word (1989); Block (1983); Block and Burns (1976); Block, Efthim, and Burns (1989); Bloom (1976); Brophy (1986b, 1987, 1988b); Brophy and Good (1986); Burns (1979); Dalton and Hannafin (1988); Darter and Phelps (1990); Dewalt and Rodwell (1988); Dillashaw and Okey (1983); Gillingham and Guthrie (1987); Good (1984); Guskey and Gates (1986); Johnson, G., Gersten, and Carnine (1987); Kinzie, Sullivan, and Berdel (1988); Rosenshine (1976, 1979, 1983); Rosenshine and Stevens (1986)

1.3.5 Teachers Use Validated Strategies to Help Build Students' Critical and Creative Thinking Skills.

Teachers:
a. Help students to understand that critical and creative thinking are important for success in our rapidly changing world.
b. Provide instruction in study skills, such as paraphrasing, outlining, developing cognitive maps, and using advance organizers.
c. Teach strategies for problem solving, decision making, exploration, classification, hypothesizing and provide students opportunities to practice and refine these skills.
d. Work with older students to develop metacognitive skills, so that they can examine their own thinking patterns and learn to make changes as needed.
e. Ask higher-order questions and give students generous amounts of time to respond.
f. Use instructional strategies such as probing, redirection, and reinforcement to improve the quality of student responses.
g. Incorporate computer-assisted instructional activities into building thinking skills such as verbal analogy, logical reasoning, induction/deduction, elaboration, and integration.
h. Maintain a supportive classroom environment in which students feel safe experimenting with new ideas and approaches.
i. May use specific thinking skill development programs and/or infuse thinking skill instruction into content-area lessons, since both approaches have been shown to be effective.

Bangert-Drowns and Bankert (1990); Barba and Merchant (1990); Baum (1990); Bransford, et al. (1986); Crump, Schlichter, and Palk (1988); Freseman (1990); Gall, et al. (1990); Haller, Child, and Walberg (1988); Hansler (1985); Herrnstein, et al. (1986); Horton and Ryba (1986); Hudgins and Edelman (1986); Kagan, D. M. (1988); Matthews (1989); MCREL (1985); Norris (1985); Pearson (1982); Pogrow (1988); Riding and Powell (1985, 1987); Ristow (1988), Robinson (1987); Snapp and Glover (1990); Sternberg and Bhana (1986); Tenenbaum (1986); Wong (1985)

1.3.6 Teachers Use Effective Questioning Techniques to Build Basic and Higher-Level Skills.

Teachers:
a. Make use of classroom questioning to engage student interaction and to monitor student understanding.
b. Structure questions so as to focus students' attention on key elements in the lesson.
c. Ask a combination of lower-cognitive (fact and recall) and higher-cognitive (open-ended and interpretive) questions to check students' understanding and stimulate their thinking during classroom recitations.
d. Ask lower-cognitive questions that most students will be able to answer correctly when helping students to acquire factual knowledge.

e. Ask a majority of higher-cognitive questions (50 percent or more) of students above the primary grades during classroom recitations.
f. Allow generous amounts of "wait-time" when questioning students—at least three seconds for lower-cognitive questions and more for higher-cognitive ones.
g. Continue to interact with students whose initial responses are inaccurate or incomplete, probing their understanding and helping them to produce better answers.
h. Make certain that both faster and slower learners have opportunities to respond to higher cognitive questions and are given sufficient wait-time.

Atwood and Wilen (1991); Brophy (1986b, 1987); Brophy and Good (1986); Ciardiello (1986); Cotton (1989a); Gall (1984); Good (1984); Honea (1982); Hoxmeier (1986); Johnston, Markle, and Haley-Oliphant (1937); Redfield and Rousseau (1981); Riley (1986); Samson, et al. (1987); Slavin (1994a); Stevens (1985); Swift and Gooding (1983); Swift, Swift, and Gooding (1984); Tobin and Capie (1980, 1981); Winne (1979)

1.3.7 Teachers Integrate Workplace Readiness Skills into Content-Area Instruction.

Teachers:
a. Communicate to students of all age/grade levels that developing employability skills is important for everyone.
b. Focus on developing the higher-order skills required in the modern workplace—problem-solving and decision-making skills, learning strategies, and creative thinking.
c. Provide learning activities to foster the development of qualities such as dependability, positive attitude toward work, conscientiousness, cooperation, adaptability, and self-discipline.
d. Provide classroom environments for secondary students that replicate key features of real work settings.
e. Assign tasks like those carried out by people in real work settings.
f. Function as facilitators and coaches rather than lecturers or order givers, giving older students much of the responsibility for their own learning.
g. Base learning activities on students' learning needs and styles, rather than adhering rigidly to textbooks or lesson plans.
h. Teach the value of employability skills inductively, by having students experience how group projects are affected by the presence or absence of these skills.
i. Use work-based learning experiences to reinforce basic skills.
j. Select workplace problems to illustrate how basic academic skills are applied in real-world settings.
k. Demonstrate the relevance of learning material by showing how it relates to other courses and to workplace applications.
l. Organize the secondary curriculum around broad occupational themes/categories.

Beach (1982); Berryman (1988, 1991); Cotton (1993a); Evans and Burck (1992); Foster, D. E., Engels, and Wilson (1986); Gregson (1992); Gregson and Bettis (1991); Gregson and Trawinski (1991); Hamilton (1990); Hull (1993); Meyer and Newman (1988); Parnell (1994); Stasz (1990, 1993); Stemmer, Brown, and Smith (1992); Stone, et al. (1990); Stone-Ewing (1995); Voc. Ed. Weekly (1993); Wentling (1987)

1.4 TEACHER-STUDENT INTERACTIONS

1.4.1 Teachers Hold High Expectations for Student Learning.

Teachers:
a. Set high standards for learning and let students know they are all expected to meet them. They assure that standards are both challenging and attainable.
b. Expect *all* students to perform at a level needed to be successful at the next level of learning; they do not accept that some students will fail.

c. Hold students accountable for completing assignments, turning in work, and participating in classroom discussions.
d. Provide the time, instruction, and encouragement necessary to help lower achievers perform at acceptable levels. This includes giving them learning material as interesting and varied as that provided for other students, and communicating warmth and affection to them.
e. Monitor their own beliefs and behavior to make certain that high expectations are communicated to all students, regardless of gender, socioeconomic status, race, or other personal characteristics. Teachers avoid unreliable sources of information about students' learning potential, such as the biases of other teachers.
f. Emphasize that different students are good at different things and reinforce this by having them view each other's products and performances.

Bain, Lintz, and Word (1989); Bamburg (1994); Berliner (1979, 1985); Block (1983); Block and Burns (1976); Bloom (1976); Brookover, et al. (1979); Brophy (1983, 1987); Brophy and Good (1986); Cooper and Good (1983); Cooper and Tom (1984); Cotton (1989c); Edmonds (1979a,b); Gersten, Carnine, and Zoref (1986); Good (1982, 1987); Hawley, et al. (1984); Keneal, et al. (1991); Marshall and Weinstein (1985); Mortimore, et al. (1988); Paredes and Frazer (1992); Patriarca and Kragt (1986); Porter and Brophy (1988); Pratton and Hales (1986); Rosenshine (1983); Sammons, Hillman, and Mortimore (1994); Saracho (1991); Slavin (1994a); Stevens (1985); Teddlie, Kirby, and Stringfield (1989); Woolfolk and Brooks (1985)

1.4.2 Teachers Provide Incentives, Recognition, and Rewards to Promote Excellence.

Teachers:
a. Define excellence by objective standards, not by peer comparison. They establish systems for consistent recognition of students for academic achievement and excellent behavior.
b. Relate recognition and rewards to specific student achievements and use them judiciously. As with praise, teachers are careful not to use unmerited or random rewards in an attempt to control students' behavior.
c. Provide incentives and rewards appropriate to the developmental level of students, including symbolic, token, tangible, or activity rewards.
d. Make certain that all students know what they need to do to earn recognition and rewards. Rewards should be appealing to students, while remaining commensurate with their achievements, i.e., not too lavish.
e. Present some rewards publicly and others privately; some immediately and some delayed to teach persistence.
f. Make some rewards available to students on an individual basis, while allowing others to earned by groups of students—as in some cooperative learning structures.

Bain, Lintz, and Word (1989); Brophy (1980, 1986a,b, 1987, 1988b); Brophy and Good (1986); Cameron and Pierce (1994); Canella (1986); Emmer and Evertson (1980, 1981a); Evertson (1981); Evertson, Anderson, and Anderson (1980); Gettinger (1983); Good (1984); Gottfried and Gottfried (1991); Hawley, et al. (1984); Lysakowski and Walberg (1981); Morgan (1984); Rosenshine and Stevens (1986); Rosswork (1977); Rutter, et al. (1979); Slavin (1980, 1984, 1988a, 1989a, 1991, 1994a)

1.4.3 Teachers Interact with Students in Positive, Caring Ways.

Teachers:
a. Pay attention to student interests, problems, and accomplishments in social interactions both in and out of the classroom.
b. Encourage student effort, focusing on the positive aspects of students' answers, products, and behavior.

c. Communicate interest and caring to students both verbally and through such nonverbal means as giving undivided attention, maintaining eye contact, smiling, and nodding.
d. Encourage students to develop a sense of responsibility and self-reliance. They give older students, in particular, opportunities to take responsibility for school-related activities and to participate in making decisions about important school issues.
e. Share anecdotes and incidents from their experience as appropriate to build rapport and understanding with students.

Agne, Greenwood, and Miller (1994); Allen, J. D. (1986); Anderson, C. S. (1985); Bain, Lintz, and Word (1989); Bain and Jacobs (1990); Cooper and Good (1983); Cooper and Tom (1984); Cotton (1992a); Doyle (1986); Edmonds (1979a,b); Emmer and Evertson (1980, 1981a); Glatthorn (1989); Good (1987); Good and Brophy (1984); Gottfried and Gottfried (1991); Hawkins, Doueck, and Lishner (1988); Kearns (1988); Kohn (1991); Marshall and Weinstein (1985); McDevitt, Lennon, and Kopriva (1991); Midgley, Feldlaufer, and Eccles (1989); Mills (1989); Mortimore and Sammons (1987); Mortimore, et al. (1988); Pecukonis (1990); Rutter, et al. (1979); Taylor, S. E. (1986-87); Teddlie, Kirby, and Stringfield (1989); Wang, Haertel, and Walberg (1993-1994); Weinstein and Marshall (1984); Woolfolk and Brooks (1985)

1.5 EQUITY

1.5.1 Teachers Give High-Needs Students the Extra Time and Instruction They Need to Succeed.

Teachers:
a. Use approaches such as tutoring, continuous progress and cooperative learning with young children to reduce the incidence of later academic difficulties.
b. Monitor student learning carefully to maintain awareness of students having frequent academic difficulty; they note problems and arrange for help as needed.
c. Communicate high learning and behavioral expectations to high-needs students and hold them accountable for meeting classroom standards.
d. Provide high-needs students with instruction in study skills and in the kinds of learning strategies used by successful students (e.g., summarizing, questioning, predicting, etc.).
e. Give high-needs students additional learning time for priority objectives whenever possible; students spend this time in interactive learning activities with teachers, aides, or peer tutors.

Anderson, L. W. (1983); Bamburg (1994); Brophy (1986b, 1988); Brown, B. W., and Saks (1986); Cooper, Findlay, and Good (1982); Cooper and Tom (1984); Cotton (1989c, 1991b); Crawford (1989); Druian and Butler (1987); Gall, et al. (1990); Gettinger (1984, 1989); Good (1987); Griswold, Cotton, and Hansen (1986); Lumpkins, Parker, and Hall (1991); Madden, et al. (1993); Sammons, Hillman, and Mortimore (1994); Seifert and Beck (1984); Slavin (1980, 1984, 1987b, 1988a,b, 1989a); Slavin, Karweit, and Madden (1989); Slavin, Karweit, and Wasik (1994); Slavin and Madden (1989a,b); Stein, Leinhardt, and Bickel (1989); Waxman, et al. (1985)

1.5.2 Teachers Support the Social and Academic Resiliency of High-Needs Students.

Teachers:
a. Communicate warmth and encouragement to high-needs students, comparing their learning with the students' own past performance rather than making comparisons with other students.
b. Work together to assure that each high-needs student has an ongoing supportive relationship with at least one school staff member.
c. Create opportunities for these students to develop supportive peer relationships and serve as peer resources to one another through activities such as youth service, cooperative learning, and peer and cross-age tutoring.

d. Teach problem-solving skills and provide opportunities for students to practice real-life application of these skills.
e. Help each student to develop an internal locus of control by calling attention to the relationship between individual effort and results.
f. Encourage family members and other key persons in the lives of high-needs students to continually express high expectations for their behavior and school achievement.
g. Encourage key people in these students' lives to involve them in making real and meaningful contributions to the family and community.

Benard (1993a,b); Glaser, et al. (1992); Grossman, et al. (1992); Kalkowski (1995); Linquanti (1992); Luthar (1991); Midgley, Feldlaufer, and Eccles (1988)

1.5.3 Teachers Promote Respect and Empathy Among Students of Different Socioeconomic and Cultural Backgrounds.

Teachers:
a. Work to ensure equity in learning opportunity and achievement for all socioeconomic and cultural groups.
b. Communicate positive regard for students of different groups by holding high expectations for all students and treating them equitably.
c. Provide multicultural education activities as an integral part of classroom learning.
d. Make use of culturally heterogeneous cooperative learning structures in which there is individual accountability and group recognition.
e. Provide learning activities designed to reduce prejudice and increase empathy among cultures, races, genders, socioeconomic levels, and other groups. These include use of print, video, and theatrical media which dramatize the unfairness of prejudice and present various groups in a positive light.
f. Teach critical thinking skills in relation to intercultural issues, e.g., they make students aware that prejudicial thinking is replete with fallacies of reasoning, such as overgeneralization.
g. Contribute to the development of students' self-esteem by treating them with warmth and respect and offering them opportunities for academic success.
h. Avoid using practices known to be detrimental to intercultural relations, such as long-term ability grouping and attempting to change attitudes through exhortation.

Allport (1954); Byrnes (1988); Cotton (1991a, 1992b); Davis (1985); DeVries, Edwards, and Slavin (1978); Gabelko (1988); Gallo (1989); Gimmestad and DeChiara (1982); Hart and Lumsden (1989); Mabbutt (1991); McGregor (1993); Moore (1988); Oakes (1985); Pate (1981, 1988); Roberts (1982); Rogers, Miller, and Hennigan (1981); Ruiz (1982); Slavin (1979a, 1985, 1987, 1988b, 1989a, 1990); Swadener (1988); Walberg and Genova (1983); Warring, Johnson, and Maruyama (1985)

1.6 ASSESSMENT

1.6.1 Teachers Monitor Student Progress Closely.

Teachers:
a. Monitor student learning regularly, both formally and informally.
b. Focus their monitoring efforts on early identification and referral of young children with learning difficulties.
c. Require that students be accountable for their academic work.
d. Carefully align classroom assessments of student performance with the written curriculum and actual instruction.
e. Are knowledgeable about assessment methodology and use this knowledge to select or prepare valid, reliable assessments.

f. Use routine assessment procedures to check student progress. These include conducting recitations, circulating and checking students' work during seatwork periods, assigning and checking homework, conducting periodic reviews with students, administering tests, and reviewing student performance data.
g. Review assessment instruments and methods for cultural, gender, and other bias and make changes as needed.
h. Use assessment results not only to evaluate students, but also for instructional diagnosis, to find out if teaching methods are working, and to determine whether classroom conditions support student learning.
i. Set grading scales and mastery standards high to promote excellence.
j. Encourage parents to keep track of student progress.

Bain, Lintz, and Word (1989); Block, Efthim, and Burns (1989); Bloom (1974), Brookover (1979); Brophy and Good (1986); Cohen, S. A. (1994); Cohen, S. A., et al. (1989); Costa and Kallick (1992); Dillashaw and Okey (1983); Engman (1989); Evertson, et al. (1982, 1986); Fuchs and Fuchs (1986); Fuchs, Fuchs, and Tindall (1986); Good and Grouws (1979); Howell and McCollum-Gahley (1986); Mortimore, et al. (1988); Natriello (1987); Porter and Brophy (1988); Rosenshine (1983); Rosenshine and Stevens (1986); Sammons, Hillman, and Mortimore (1994); Slavin, Karweit, and Madden (1989); Stiggins (1991); Tomic (1989); Walberg, Paschal, and Weinstein (1985)

1.6.2 Teachers Make Use of Alternative Assessments as well as Traditional Tests.

Teachers:
a. Participate in staff development activities that prepare them to develop rubrics, establish standards, and design tasks.
b. Communicate to students and parents that assessments involving performances and products are the best preparation for life outside of school.
c. Begin by using alternative assessments on a small scale. They recognize that the best assessments are developed over time and with repeated use.
d. Plan assessments as they plan instruction—not as an afterthought.
e. Develop assessments that have instructional value as well as assessing student learning.
f. Teach children the scoring systems that will be used to evaluate their work and allow them to practice using these systems for self- and peer assessment.
g. Secure input from older students for establishing performance criteria.
h. Involve students in peer assessment activities, such as peer editing.
i. Collect assessments used profitably by others and use or adapt these for their own classrooms.

Arter, et al. (1994); Belk and Calais (1993); Fuchs and Deno (1994); Goldberg (1995); Herman (1992); Lazzaro (1995); McTighe and Ferrara (1994); Schnitzer (1993); Shavelson and Baxter (1992); Sperling (1994); Stiggins (1994)

2. SCHOOL CHARACTERISTICS AND PRACTICES

The qualities of the school as a whole can either enhance or detract from the learning environment. Key factors in support of student success include efficient planning and clear goals, validated organization and management practices, strong leadership and continuous improvement, positive staff and student interactions, a commitment to educational equity, regular assessment, support programs, and positive relationships with parents and community members.

2.1 PLANNING AND LEARNING GOALS

2.1.1 Everyone in the School Community Emphasizes the Importance of Learning.

Administrators and teachers:

a. Have high expectations for student achievement; all students are expected to work hard to attain priority learning goals.
b. Continually express expectations for improvement of the instructional program.
c. Emphasize academic achievement when setting goals and school policies.
d. Develop mission statements, slogans, mottos, and displays that underscore the school's academic goals.
e. Focus on student learning considerations as the most important criteria for making decisions.

Andrews and Soder (1987); Armor, et al. (1976); Austin and Holowenzak (1985); Bamburg (1994); Bamburg and Andrews (1987, 1991); Berliner (1979); Brookover and Lezotte (1979); Edmonds (1979a); Edmonds and Frederiksen (1979); Fullan (1994); Good (1987); Good and Brophy (1986); Hoy (1990); Keedy (1992); Larsen (1987); Levine (1990); Lezotte and Bancroft (1985); Little (1982); Madden, Lawson, and Sweet (1976); Murphy and Hallinger (1988); Paredes and Frazer (1992); Pavan and Reid (1994); Peng (1987); Purkey and Smith (1983); Rosenholtz (1985, 1989a,b); Rutter, et al. (1979); Sammons, Hillman, and Mortimore (1994); Shann (1990); Wang, Haertel, and Walberg (1993-1994); Weber (1971); Wilson, B. L., and Corcoran (1988)

2.1.2 Administrators and Teachers Base Curriculum Planning on Clear Goals and Objectives.

Administrators and teachers:

a. Define learning goals and objectives clearly and display them prominently. They use building curriculum—and district curriculum resources, when available—for instructional planning.
b. Establish clear relationships among learning goals, instructional activities, and student assessments and display these in written form.
c. Engage in collaborative curriculum planning and decision making, focusing on building continuity across grade levels and courses; teachers know where they fit in the curriculum.
d. Work with each other, the students, and the community to promote understanding of the curriculum and the priorities within it.
e. Conduct periodic curriculum alignment and review efforts to ensure congruence with school and district goals.

Behr and Bachelor (1981); Berliner (1985); Block (1983); Bossert (1985); Cohen, S. A. (1994); Corcoran (1985); Deal and Peterson (1993); DeBevoise (1984); Edmonds (1979a); Engman (1989); Everson, et al. (1986); Good and Brophy (1986), Griswold, Cotton, and Hansen (1986); Hawley, et al (1984); Hord (1992a); Larsen (1987); Leithwood and Montgomery (1982, 1985); Levine and Lezotte (1990); Lezotte and Bancroft (1985); Peng 987); Rosenholtz (1985, 1989a,b); Sammons, Hillman, and Mortimore (1994); Sarason (1971); Schau and Scott (1984); Scott (1984); Stevens (1985); Venezky and Winfield (1979); Vincenzi and Ayrer (1985)

2.1.3 Administrators and Teachers Integrate the Curriculum, as Appropriate.

Administrators and teachers:

a. Explore the feasibility of integrating traditional subject-area content around broad themes, and identify areas where this approach is appropriate.
b. Arrange time for teacher teams to work on integrating curriculum, plan instructional strategies, and develop assessments.
c. Make other resources available for use in integrated curriculum units in addition to textbooks.
d. Pursue curriculum integration gradually, so that staff can make adjustments, gain feelings of ownership, and evaluate the success of each effort.
e. As with any innovation, inform parents and community of the research and experience supporting curriculum integration and engage their support.

Aschbacher (1991); Brophy and Alleman (1991); Caine (1991); Friend (1985); Gehrke (1991); Greene (1991); Henderson and Landesman (1992); Herman (1992); Hough (1994); Ladewig (1987); Lake (1994); Levitan (1991); Martinez (1992); McCarthy and Still (1993); Meckler (1992); Slavin, et al. (1993); Vars (1987); Vye (1990); Willett (1992); Williams, D. (1991)

2.1.4 Administrators and Teachers Provide Computer Technology for Instructional Support and Workplace Simulation.

Administrators and teachers:

a. Receive training to enable them to use computer-assisted instruction effectively.
b. Use computer-assisted instruction as a supplement to—not a replacement for—traditional, teacher-directed instruction.
c. Provide computer activities that simulate workplace conditions and tasks to build employability skills for all students.
d. Make use of computers and word processing software to foster the development of writing skills.
e. Provide high-interest drill-and-practice programs to support learning, especially with students requiring skill remediation.
f. Provide computer-assisted instructional activities for chronically misbehaving students and students with negative attitudes toward traditional learning methods.

Bangert-Drowns (1985); Bangert-Drowns, Kulik, and Kulik (1985); Bahr and Rieth (1989); Bennett (1991); Bialo and Sivin (1980); Braun (1990); Capper and Copple (1985); Darter and Phelps (1990); Dickinson (1986); Ehman and Glen (1987); Fletcher, Hawley, and Piele (1990); Gore, et al. (1989); Keuper (1985); Kinnaman (1990); Kulik and Kulik (1987, 1991); Liao (1992); Mevarech and Rich (1985); Robertson (1987); Roblyer (1989); Rodrigues and Rodrigues (1986); Rupe (1986); Ryan (1991); Stennet (1985); Woodward, Carnine, and Gersten (1988)

2.1.5 Administrators and Teachers Include Workplace Preparation Among School Goals.

Administrators and teachers:

a. Recognize the importance of developing employability skills in all students, regardless of their postsecondary plans.
b. Include age-appropriate activities to develop workplace readiness skills at all levels, K-12.
c. Ensure that students develop the higher-order skills in demand in the modern workplace—problem-solving and decision-making skills, learning strategies, and creative thinking.
d. Give special emphasis to the development of qualities required for workplace success—dependability, positive attitude toward work, conscientiousness, cooperation, adaptability, and self-discipline.

e. Provide, for secondary students, learning environments that replicate key features of real work settings.
f. Give older students tasks which approximate those performed by people in real work settings.
g. Ensure that teachers have considerable autonomy in establishing learning activities, classroom design, and instructional approaches.
h. Assist secondary students in preparing and updating their written career plans to identify their future educational and occupational directions.
I. Help students to reflect on their school- and community-based learning experiences.

Beach (1982); Berryman (1988; 1991); Carnevale, Gainer, and Meltzer (1988); Cotton (1993a); Foster, Engels, and Wilson (1986); Gregson (1992); Gregson and Bettis (1991); Gregson and Trawinski (1991); Lankard (1990); Packer (1992); Parnell (1994); Poole (1985); SCANS Report (1991, 1992); Stacey (1994); Stasz (1990, 1993)

2.2 SCHOOL MANAGEMENT AND ORGANIZATION

2.2.1 A School-Based Management Team Makes Many of the Decisions Regarding School Operations.

Team members:
a. Have the support of the district to make school-level decisions, provided these are in keeping with legal mandates and district goals.
b. Are broadly representative, including supportive administrators, teachers, other school staff, parent and community members, and students.
c. Communicate to constituents what school-based management is and secure their support.
d. Receive district-sponsored training in legal requirements, school operations, and group process skills.
e. Assume decision-making responsibility gradually, i.e., in one governance area (curriculum, instruction, budget, etc.) at a time.
f. Function as a true decision-making body rather than merely an advisory one, e.g., the principal does not have veto power over team decisions.
g. Involve teacher participants in decision making about their areas of expertise (curriculum and instruction) and avoid involving them in relatively trivial administrative matters.
h. Receive recognition for the increased effort that school-based management requires of participants.

Arterbury and Hord (1991); Bachus (1992); Caldwell and Wood (1988); Cistone, Fernandez, and Tornillo (1989); Conley and Bacharach (1990); David (1989); Hord (1992b); Jackson and Crawford (1991); Levine (1991); Levine and Eubanks (1992); Louis and King (1993); Malen, Ogawa, and Kranz (1990a,b, 1991); Mojkowski and Fleming (1988); Odden and Wohlstetter (1995); Short and Greer (1993); Taylor and Levine (1991); White, P. A. (1989); Wohlstetter, Smyer, and Mohrman (1994)

2.2.2 Administrators and Teachers Group Students in Ways That Promote Effective Instruction.

Administrators and teachers:
a. Place students in heterogeneous groups for required subjects and courses; they avoid underplacement of students.
b. Make use of instructional aides and grouping strategies to keep the student/adult ratio low, especially during instruction aimed at priority objectives.
c. Provide in-class instruction in small groups for low achievers whenever possible to promote academic success and avoid the stigma often associated with pull-out classes.

d. Make certain that ability groups, when used, are short term and that student placement is reviewed frequently for appropriateness.
e. Avoid the practice of long-term academic tracking, which research has shown to have negative effects on the achievement and attitudes of the majority of students.
f. Are aware of the many social and academic benefits of multiage (nongraded) grouping, especially for primary-level children, and at least explore the possibility of implementing this structure.

Abadzi (1984, 1985); Affleck, et al. (1988); Brookover and Lezotte (1979); Brown, K. S., and Martin (1989); California SDE (1977); Cohen, E. C. (1986); Cotton (1993b); Eames (1989); Evertson (1992); Gamoran (1987, 1992); Gamoran and Berends (1987); Garcia (1990); Gutierrez and Slavin (1992); Haller (1985); Hallinan (1984); Hawley, et al. (1984); Levine and Lezotte (1990); Miller, B. A. (1990); Oakes (1985, 1986a,b); Oakes, et al. (1990); Pavan (1992a,b); Peterson, P. L., Wilkinson, and Hallinan (1984); Schneider (1989); Slavin (1987a,b, 1993, 1994b); Slavin, et al. (1993); Sorenson and Hallinan (1986); Webb (1980); Winsler and Espinosa (1990)

2.2.3 Administrators and Teachers Assure That School Time is Use for Learning.

Administrators and teachers:
a. Schedule school events so as to avoid disruption of learning time.
b. Emphasize the importance of protecting learning time when interacting with each other and with parents and students.
c. Allocate school time for various subjects based on school and district goals and monitor time use to make certain allocations are followed.
d. Organize the school calendar to provide maximum learning time. They review potential new instructional programs and school procedures for their likely impact on learning time prior to adoption.
e. Keep unassigned time and time spent on noninstructional activities to a minimum during the school day; they keep loudspeaker announcements and other administrative intrusions brief and schedule them for minimal interference with instruction.
f. Ensure that the school day, classes, and other activities start and end on time.
g. Participate in inservice to improve their skills in making appropriate time allocations, managing students' behavior, and increasing student time on task.
h. Keep student pull-outs from regular classes to a minimum for either academic or nonacademic purposes, and monitor the amount of pull-out activity.
i. Provide extra learning time outside of regular school hours for students who need or want it.
j. Establish and enforce firm policies regarding tardies, absenteeism, and appropriate classroom behavior to maximize instructional time.

Anderson, L. W. (1983); Berliner and Cassanova (1989); Brookover and Lezotte (1979); Brophy (1988); Denham and Lieberman (1980); Evertson (1985); Fisher, et al. (1980); Fisher and Berliner (1985); Karweit (1984, 1985); Larsen (1987); Levine and Lezotte (1990); Mazzarella (1984); Peng (1987); Sanford, Emmer, and Clements (1983); Sanford and Evertson (1983); Slavin and Madden (1989b); Stallings (1980, 1985b); Strother (1985); Wiley and Harnischfeger (1974)

2.2.4 Administrators and Teachers Establish and Enforce Clear, Consistent Discipline Policies.

Administrators and teachers:
a. Provide a written code of conduct specifying acceptable student behavior, discipline procedures, and consequences. They make certain that students, parents and all staff members know the code by providing initial trainings and periodic reviews of key features.
b. Work to create a warm, supportive school environment. The principal, in particular, is visible and personable in interactions with staff and students.

c. Administer discipline procedures quickly following infractions, making sure that disciplinary action is consistent with the code and that all students are treated equitably. They take action on absenteeism and tardiness quickly—normally within a day.
d. Deliver sanctions that are commensurate with the offense committed.
e. Make certain that students understand why they are being disciplined, in terms of the code of conduct.
f. Carry out discipline in a neutral, matter-of-fact way, focusing on the student's behavior rather than personality or history.
g. Develop and use methods for providing positive reinforcement for appropriate behavior, particularly for those students with a history of behavior problems.
h. Assist students with behavior problems to develop social interaction, self-control, and anger management skills.
i. Avoid expulsions and out-of-school suspensions whenever possible, making use instead of in-school suspension accompanied by assistance and support.
j. Engage in problem solving with each other and with students to address discipline issues, focusing on causes rather than symptoms.
k. Strike agreements with parents about ways to reinforce school disciplinary procedures at home.
l. Adapt any commercial discipline programs used so that they match local circumstances and needs.
m. Develop and implement, as needed, projects to prevent violence and gang activity.
n. Engage in training activities to improve skills in prevention and remediation of violence and other discipline problems.

Bain, H. P., and Jacobs (1990); Block (1983); Boyd (1992); Brookover and Lezotte (1979); Cantrell and Cantrell (1993); Corcoran (1985); Cotton (1990b); Doyle (1989); Duke (1989); Edmonds (1979a,b, 1982); Edmonds and Frederiksen (1979); Fenley, et al. (1993); Good and Brophy (1986); Gottfredson, D. C. (1987); Gottfredson, D. C., Gottfredson, and Hybl (1993); Hawley, et al. (1984); Lasley and Wayson (1982); Leach and Byrne (1986); Leming (1993); Levine and Eubanks (1989); Levine and Lezotte (1990); Madden, Lawson, and Sweet (1976); Render, Padilla, and Krank (1989); Rutter, et al. (1979); Sammons, Hillman, and Mortimore (1994); Short (1988); Staub (1990); Wayson and Lasley (1984); Weber (1971); Wilson and Corcoran (1988); Wilson-Brewer, et al. (1991)

2.2.5 Administrators and Teachers Provide a Pleasant Physical Environment for Teaching and Learning.

Administrators and teachers:
a. Arrange for physical facilities to be kept clean and reasonably attractive; damage is repaired immediately.
b. Arrange for hallways and classrooms to be cheerfully decorated with student products, seasonal artwork, posters depicting positive values and school spirit, etc.
c. Provide classroom, meeting, and storage space sufficient for teaching and learning, conferences, inservice activities, etc.
d. Secure staff and student input periodically on facilities needs—repair, replacement, refurbishing, temperature, cleanliness, etc.
e. Subdivide large facilities into smaller sections to facilitate communication and reduce isolation.

Anderson, C. S. (1985); Boyd (1992); Darder and Upshur (1992); Glatthorn (1989); Good and Brophy (1986); Hawley, et al. (1984); Hess (1987); Levine and Lezotte (1990); Little (1982); Peng (1987); Rutter, et al. (1979); Sammons, Hillman, and Mortimore (1994); Shann (1990); Teddlie, Kirby, and Stringfield (1989); Wilson, B. L., and Corcoran (1988)

2.3 LEADERSHIP AND SCHOOL IMPROVEMENT

2.3.1 Leaders Undertake School Restructuring Efforts as Needed to Attain Agreed-upon Goals for Students.

Administrators and other leaders:

a. Review school operations in light of agreed-upon goals for student performance.
b. Work with school-based management team members to identify any needed changes (in organization, curriculum, instruction, scheduling, etc.) to support attainment of goals for students.
c. Identify kinds of staff development needed to enable school leaders and other personnel to bring about desired changes.
d. Study restructuring efforts conducted elsewhere for ideas and approaches to use or adapt.
e. Consider school contextual factors when undertaking restructuring efforts—factors such as availability of resources, nature of incentives and disincentives, linkages within the school, school goals and priorities, factions and stresses among the staff, current instructional practices, and legacy of previous innovations.

Fortune, Williams, and White (1992); Fullan (1993); Lee and Smith (1993); Leithwood (1994); Lewis (1989); McCarthy and Still (1993); Murphy and Hallinger (1993); Prestine (1993); Prestine and Bowen (1993)

2.3.2 Strong Leadership Guides the Instructional Program.

Administrators and other instructional leaders:

a. Believe that all students can learn and that the school makes the difference between success and failure.
b. Emphasize learning as the most important reason for being in school; public speeches and writings emphasize the importance and value of high achievement.
c. Have a clear understanding of the school's mission and are able to state it in direct, concrete terms. They establish an instructional focus that unifies staff.
d. Seek, recruit and hire staff members who will support the school's mission and contribute to its effectiveness.
e. Know and can apply validated teaching and learning principles; they model effective teaching practices for staff as appropriate.
f. Know educational research, emphasize its importance, share it, and foster its use in problem solving.
g. Seek out innovative curricular programs, observe these, acquaint staff with them, and participate with staff in discussions about adopting or adapting them.
h. Set expectations for curriculum quality through the use of standards and guidelines. They periodically check the alignment of curriculum with instruction and assessment, establish curricular priorities, and monitor the implementation of curriculum.
i. Check student progress frequently, relying on explicit performance data. They make results public, and work with staff to set standards, use them as points of comparison, and address discrepancies.
j. Expect all staff to meet high instructional standards. They secure staff agreement on a schoolwide instructional model, make classroom visits to observe instruction, focus supervision activities on instructional improvement, and provide and monitor staff development activities.
k. Communicate the expectation that instructional programs will improve over time. They provide well-organized, systematic improvement strategies; give improvement activities high priority and visibility; and monitor implementation of new practices.

l. Involve the full staff in planning implementation strategies. They set and enforce expectations for participation, ensure that others follow through on commitments, and rally support from the different constituencies in the school community.

Andrews and Soder (1987); Bamburg and Andrews (1991); Berman and McLaughlin (1979); Biester, et al. (1984); Bossert (1988b); Brookover (1979b, 1981); Brookover and Lezotte (1979); Brundage (1979); Cawelti (1987); Corbett, et al. (1984); Cohen, S. A. (1994); Cohen, S. A., et al. (1989); Crisci, et al. (1988); DeBevoise (1984); Druian and Butler (1987); Eberts and Stone (1988); Edmonds (1979a); Emrick (1977); Everson, et al. (1986); Fullan (1994); Glasman (1984); Good and Brophy (1986); Krug (1992); Hallinger, Bickman, and Davis (1989); Hawley, et al. (1984); Heck (1992); High and Achilles (1986); Larsen (1987); Leithwood and Montgomery (1982, 1985); Levine and Lezotte (1990); Little (1982); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); Ogawa and Hart (1985); Pavan and Reid (1991, 1994); Purkey and Smith (1983); Rosenholtz (1987, 1989a,b); Sammons, Hillman, and Mortimore (1994); Schmitt, (1990); Venezky and Winfield (1979); Weber (1971)

2.3.3 Administrators and Other Leaders Continually Strive to Improve Instructional Effectiveness.

Administrators and other leaders:

a. Expect that educational programs will be changed so that they work better; they are never complacent about student achievement.
b. Direct school improvement efforts at clearly defined student achievement and/or social behavior goals; they secure schoolwide and community understanding and agreement about the purpose of improvement efforts.
c. Work with staff and school-based management groups to develop improvement goals based on review of school performance data; the goals then drive planning and implementation.
d. Review programs and practices shown to be effective in other school settings for their potential in helping to meet school needs.
e. Specify clearly the roles and responsibilities for the various aspects of the school improvement effort.
f. Check implementation carefully and frequently, note and publicize progress, and modify activities to make things work better.
g. Secure and encumber resources to support improvement activities, acquire resources from many sources including the community, and make resource allocations based on instructional priorities.
h. Renew or redirect the improvement focus as goals are achieved, report and celebrate success. and work with staff to establish new goals.
i. Allow adequate time for innovations to become integrated into the life of the school, and provide ongoing support to the full staff during the implementation process.
j. Provide periodic events to acknowledge and celebrate successes and to renew interest and energy for continued school improvement work.

Bamburg and Andrews (1989, 1991); Berman and McLaughlin (1979); Biester, et al. (1984); Bossert (1982, 1988); Boyd (1992); Brookover (1979b); Brundage (1979); David (1989); Deal and Peterson (1993); Edmonds (1979a, b); Emrick (1977); Everson, et al. (1986); Evertson (1986); Fullan (1992, 1994); Gall, et al. (1985); Good and Brophy (1985); Hallinger and Hausman (1993); Hawley, et al. (1984); Hord (1990, 1992); Hord and Huling-Austin (1986); Leithwood and Montgomery (1982); Levine (1990); Levine and Lezotte (1990); Little (1981, 1982); Louis and King (1993); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); Murphy and Hallinger (1993); Oakes (1989); Pavan and Reid (1994); Purkey and Smith (1983); Rosenholtz (1985, 1989a,b); Sparks (1983, 1986); Stringfield and Teddlie (1988); Venezky and Winfield (1979); Weber (1971)

2.3.4 Administrators and Other Leaders Engage Staff in Professional Development and Collegial Learning Activities.

Administrators and other leaders:

a. Make resources available to support ongoing programs of professional development for staff.
b. Set aside time for staff development activities, with at least part of that time made available during the regular work day.
c. Solicit and use staff input for the content of professional development activities; staff must feel the activities are relevant to them in order to benefit.
d. Provide activities that enhance teacher's capabilities in the major areas of technical repertoire, reflective practice, application of research, and collaborative skills.
e. Review research findings to identify effective staff development approaches for improving student performance.
f. Recognize that adults, like children, have different learning styles and provide diverse kinds of activities in response to these differences.
g. Arrange for staff involvement in group staff development activities at the building and district levels.
h. Make certain that skill-building activities are delivered over time, so that staff have the opportunity to practice their new learnings and report outcomes.
i. Build into staff development activities the opportunity for participants to share ideas and concerns regarding the use of new programs and practices.
j. Provide or arrange for ongoing technical assistance for school staff as they pursue school improvement activities.
k. Provide follow-up activities to ensure that newly acquired knowledge and skills are applied in the classroom.
l. Make resources available for staff to participate in individual professional development activities to enhance job-related knowledge and skills.
m. Create structures for staff members to learn from one another through peer observation/feedback and other collegial learning activities.
n. Work to establish a norm of collegiality; communicate the expectation that staff members will routinely share ideas and work together to improve the instructional program.

Bamburg and Andrews (1991); Bennett (1987); Block (1983); Boyd (1992); Butler (1989, 1992); Corcoran (1985); David (1989); Deal and Peterson (1993); Eubanks and Levine (1983); Everson, et al. (1986); Evertson (1986); Fullan (1992, 1994); Gage (1984); Gall, et al. (1984); Gall and Renchler (1985); Hawley, et al. (1984); Hord and Huling-Austin (1986); Joyce and Showers (1980); Joyce, Murphy, Showers, and Murphy (1989); Korinek, Schmid, and McAdams (1985); Levine, Levine, and Eubanks (1985); Levine and Lezotte (1990); Little (1982, 1986); Loucks-Horsley, et al. (1987); Louis and King (1993); Louis and Miles (1989); March, et al. (1993); Murphy and Hallinger (1993); Oakes (1989); Rosenholtz (1985, 1989a,b); Sammons, Hillman, and Mortimore (1994); Sparks (1983, 1986), Sparks and Loucks-Horsley (1990); Stevenson (1987); Wade (1985)

2.4 ADMINISTRATOR-TEACHER-STUDENT INTERACTIONS

2.4.1 Administrators Communicate High Expectations for Teacher Performance.

Administrators:

a. Promote a schoolwide belief that all students can be successful learners and work with teachers to meet the challenge of teaching them.
b. Negotiate individual professional growth goals with each teacher. They use written supervision and evaluation procedures, and all staff receive feedback on performance at least annually.
c. Use guidelines made in advance for conducting classroom observation. They provide feedback quickly, placing emphasis on improving instruction and increasing student achievement.

d. Establish troubleshooting routines to help staff get quick resolution of instruction-related concerns.
e. Hold high expectations of themselves, assuming responsibility for student outcomes and making themselves visible and accessible to staff, students, parents, and community members.

Boyd (1992); Brookover and Lezotte (1979); DeBevoise (1984); Edmonds (1979a); Evertson (1986); Gaddy (1988); Gall and Renchler (1985); Good and Brophy (1986); Hallinger and Murphy (1985); Hord (1992a); Keedy (1992); Leithwood and Montgomery (1982, 1985); Levine (1990); Louis and King (1993); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); Murphy and Hallinger (1985, 1988); Pavan and Reid (1991, 1994); Porter and Brophy (1988); Rosenholtz (1985, 1989a,b); Sparks (1983, 1986); Stevens (1985); Stringfield and Teddlie (1988); Tracz and Gibson (1986); Wade (1985)

2.4.2 Administrators and Other Leaders Provide Incentives, Recognition, and Rewards to Build Strong Staff Motivation.

Administrators and other leaders:

a. Recognize excellence in teaching, using school objectives and explicit criteria to make judgments. They include student achievement as an important criterion for determining teacher success.
b. Provide incentives and rewards to teachers who expand their knowledge and expertise by taking credit classes, applying for grants, or pursuing other professional development activities.
c. Conduct both formal and informal staff recognition, with at least some rewards made publicly.
d. Review incentive structures periodically to insure equity and effectiveness.

Anderson, C. S. (1985); Armor, et al. (1976); Block (1983); Boyd (1992); Brookover (1979); Brookover and Lezotte (1979); Fullan (1990, 1991); Good and Brophy (1986); Hawley, et al. (1984); Levine and Eubanks (1989); Levine and Lezotte (1990); Little (1982); Louis and Miles (1989); Mortimore, et al. (1988); Oakes (1989); Purkey and Smith (1983); Rosenholtz (1985, 1989a,b); Vincenzi and Ayrer (1985); Wade (1985); Wilson and Corcoran (1987)

2.4.3 Administrators and Teachers Communicate High Expectations to Students and Recognize Excellent Performance on a Schoolwide Basis.

Administrators and teachers:

a. Communicate warmth and caring to all students by learning their names and something about their strengths, interests, and needs.
b. Exhibit warmth and caring for each other in the presence of students to provide a model for them.
c. Communicate to students that they are important and valued through providing activities to develop good health habits and self-esteem, as well as prevention activities regarding dropping out, pregnancy, drugs, and violence.
d. Recognize and reward excellence in achievement and behavior. They ensure that requirements for awards are clear, that explicit procedures are used, and that evaluations are based on standards rather than comparisons with peers.
e. Provide opportunities for all students to excel in their areas of strength and receive recognition.
f. Match incentives and rewards to student developmental levels, ensuring that they are meaningful to recipients and structured to build persistence of effort and intrinsic motivation.
g. Allow older students considerable opportunity to manage their own learning and provide input into school policies and operations.

Amabile, Hennessy, and Grossman (1987); Anderson, C. S. (1985); Bain and Jacobs (1990); Boyd (1992); Cantrell and Cantrell (1993); Cotton (1989c, 1990a, 1991b); DeBevoise (1984); Dryfoos (1990); Duke (1989); Fenley, et al. (1993); Gottfredson, D. C., and Gottfredson (1989); Gottfredson, D. C., Gottfredson, and Hybl (1993); Gottfried and Gottfried (1991); Kearns (1988); Keedy (1992); Levine and Eubanks (1989); Murphy and Hallinger (1985); Paredes and Frazer (1992); Sammons, Hillman, and Mortimore (1994); Shann (1990); Stiller and Ryan (1992); Wilson-Brewer, et al. (1991); Woods (1995)

2.5 EQUITY

2.5.1 Administrators and Teachers Provide Programs and Support to Help High-Needs Students Achieve School Success.

Administrators and teachers:

a. Focus on prevention of learning problems rather than remediation. Prevention programs featuring tutoring and/or small group instruction in reading are provided for young children.
b. Emphasize exploration, language development, and play in programs for pre-schoolers; kindergarten programs feature language and prereading skills using structured, comprehensive approaches.
c. Place high-needs students in comprehensive programs featuring detailed teachers' manuals, curriculum materials, lesson guides, and other support materials; they assure that these students are offered systematic alternatives to traditional instruction.
d. Place high-needs students in small classes (22 or fewer students) whenever possible.
e. Use proven methods such as continuous progress and cooperative learning to promote these students' learning success.
f. Carefully coordinate programs and activities for high-needs students (e.g., Chapter 1) with regular classroom activities.
g. Provide high-needs students instruction in test-taking skills and provide them activities to reduce test-taking anxiety.
h. Provide alternative learning arrangements which engage the special interests of older students (e.g., "school-within-a-school," off-campus activities).
i. Provide programs for older students which incorporate validated approaches such as peer, cross-age and volunteer tutoring and computer-assisted instruction.
j. Avoid retention in grade until all other alternatives have been considered and found inadequate.
k. Use pull-out programs judiciously, if at all, assuring that they are intensive, brief, and designed to catch students up with their peers quickly and return them to regular classrooms—not to support them indefinitely.
l. Use findings from ongoing monitoring efforts to adapt instruction to students' individual needs.

Allington and Johnston (1989); Bain and Jacobs (1990); Becker (1987); Brophy (1982); Chall and Snow (1988); Cotton (1989c); Crawford (1989); Cuban (1989); Druian and Butler (1987); Gall, et al. (1990); Glaser, et al. (1992); Gottfredson, G. D. (1988); Griswold, Cotton, and Hansen (1986); Honig (1989); Knapp, Turnbull, and Shields (1990); Levine and Eubanks (1989); Levine, Levine, and Eubanks (1987); Madden, et al. (1993); McPartland and Slavin (1990); NCRVE (1989); Nye, et al. (1992); Robinson (1990); Rowan and Guthrie (1989); Slavin (1987b, 1989a, 1994); Slavin and Madden (1989); Slavin, Karweit, and Madden (1989); Slavin, Karweit, and Wasik (1994); Stein, Leinhardt, and Bickel (1989); Wasik and Slavin (1994); Wheelock and Dorman (1988)

2.5.2 Administrators and Teachers Work to Achieve Equity in Learning Opportunities and Outcomes.

Administrators and teachers:

a. Make equitable distribution of achievement and other student outcomes a clearly stated and vigorously pursued school goal.

b. Disaggregate achievement and behavioral data (by race, gender, socioeconomic level, etc.) to achieve clear understanding of how students of different groups are performing.
c. Gather information on ways to meet the needs of underserved groups.
d. Implement practices identified by research as promoting the achievement of high-needs groups (cited throughout this document).

Allen and Tadlock (1987); Arcia and Gallagher (1992); Baker (1992); Dreeben (1987); Epstein and MacIver (1992); Lee and Smith (1993); Marchant (1990); Martin-McCormick, et al. (1985); Moore (1988); Murphy and Hallinger (1989); Polanen (1991); Rumberger and Douglas (1992)

2.5.3 Administrators and Teachers Work to Establish and Maintain Positive Relationships Among People of Different Socioeconomic and Cultural Backgrounds.

Administrators and teachers:

a. Model harmonious intercultural relationships among themselves. Administrators attempt to recruit, hire, and retain staff representing different cultural backgrounds, especially in culturally diverse settings.
b. Promote activities which allow staff and students to benefit from contact with those who are socioeconomically or culturally different from themselves. These include extracurricular activities in which people have the opportunity to get to know one another as individuals and advance personal or group goals.
c. Communicate positive regard for students of different socioeconomic and cultural groups by holding high expectations for all students and treating them equitably.
d. Assure that efforts to increase intergroup harmony include attention to cross-gender relationships. They communicate high expectations to boys and girls taking nontraditional courses and take a firm stand against sexual harrassment.
e. Contribute to the development of students' self-esteem through treating them with warmth and respect and offering them opportunities for academic success.
f. Make it clear to students that demeaning statements, jokes, and graffiti related to gender, culture, race, and so on, are not acceptable.
g. Avoid the use of practices known to be detrimental to intergroup relations, e.g., academic tracking, communicating differential expectations of students based on cultural group, gender, or others factor unrelated to learning ability.
h. Review curricular materials periodically to assure freedom from gender, racial, ethnic, or other biases.

Burstein (1989); Byrnes (1988); Cotton (1991b, 1992a, 1993b); Foster, L. A. (1989); Gallo (1989); Garcia, J., Powell, and Sanchez (1990); Gay (1988); Hart and Lumsden (1989); Mabbutt (1991); Oakes (1985); Parrenas and Parrenas (1990); Pate (1981, 1988); Peck, C. A., Donaldson, and Pezzoli (1990); Rich (1987); Sammons, Hillman, and Mortimore (1994); Sanders and Wiseman (1990); Schwarzwald, Fridel, and Hoffman (1985); Shann (1990); Walsh (1988)

2.5.4 Administrators and Teachers Provide Multicultural Education Activities as an Integral Part of School Life.

Administrators and teachers:

a. Integrate multicultural activities fully into the school curriculum, rather than restricting them to one-shot or culture-of-the-month sessions.
b. Involve all students in multicultural activities—not just those students belonging to minority cultural groups.
c. Make multicultural activities a norm from the beginning of children's school experience.
d. Communicate respect for cultural plurality by recognizing and responding to culturally based differences in learning style.

e. Access and use the training and materials needed to deliver high-quality multicultural education activities; administrators provide ongoing support.

Byrnes and Kiger (1987); Campbell and Farrell (1985); Cotton (1993b); Darder and Upshur (1992); Garcia, J., Powell, and Sanchez (1990); Gimmestad and DeChiara (1982); Gottfredson, Nettles, and McHugh (1992); Grant, Sleeter, and Anderson (1986); Hart and Lumsden (1989); Levine and Lezotte (1990); Lomotey (1989); Merrick (1988); Pate (1981, 1988); Pine and Hilliard (1990); Rich (1987); Swisher (1990); Valverde (1988)

2.5.5 Administrators and Teachers Provide Challenging Academic Content and English Language Skills for Language Minority Students.

Administrators and teachers:

a. Offer language minority students a strong academic core program, like that provided for other students.
b. Identify and review promising practices for language-minority students.
c. Conduct assessment of English and native language proficiency as students enroll in the school and periodically thereafter.
d. Provide non-English-speaking (NES) students intensive English-as-a-Second Language instruction.
e. Provide NES students instruction in their native languages for their core classes whenever possible. If this is not feasible, they provide native-language materials and, where possible, tutoring in their native languages.
f. Provide limited-English-proficient (LEP) students a combination of instruction in their native languages and instruction in English.
g. Engage volunteer tutors to help students to acquire English language literacy.
h. Group students heterogeneously by ability and language so that they can learn from one another.

Ascher (1985); ASCD Panel (1987); Collier (1992); Cummins (1986); Darder and Upshur (1992); Fillmore and Valadez (1986); Garcia, E. E. (1988, 1990); Lucas, Henz, and Donato (1990); National Hispanic Commission (1984); Ramirez, Yuen, and Ramey (1991); Reyes (1992); Saldate, Mishra, and Medina (1985); So (1987); Tikunoff (1985); Valadez and Gregoire (1989)

2.6 ASSESSMENT

2.6.1 Administrators and Other Building Leaders Monitor Student Learning Progress Closely.

Administrators and teachers:

a. Engage in professional development activities to build assessment skills and evaluate the quality of assessment methods and data.
b. Collect and review performance data to ensure early identification and treatment of young children with learning difficulties.
c. Review test results, grade reports, attendance records, and other materials to spot potential problems, and make changes in instructional programs and school procedures to meet identified needs.
d. Review assessment instruments and methods for cultural, gender, or other bias and make changes as needed.
e. Make summaries of student performance available to all staff, who then assist in developing action alternatives. They also make periodic reports to parents and community members.
f. Coordinate assessment activities so that district, school, and classroom efforts work together and duplication of effort is minimized. They review assessment methods to ensure alignment with curriculum and instruction.

g. Establish and use procedures for collecting, summarizing, and reporting student achievement information. They establish and periodically update individual student records and use them to make group summaries and review them for trends.
h. Include assessment of school climate as part of assessment of student performance.
i. Use data from periodic assessment reviews when conducting curriculum reviews.

Block (1983); Blum and Butler (1985); Bossert (1985); Brookover (1979); Cawelti (1987); Cohen, S. A. (1991, 1994); Cohen, S. A., et al. (1989); Corcoran (1985); Costa and Kallick (1992); Edmonds (1979a); Everson, et al. (1986); Fullan (1992); Griswold, Cotton, and Hansen (1986); Glasman (1984); Hawley, et al. (1984); Hord (1992a); Leithwood and Montgomery (1982); Levine and Lezotte (1990); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); Mortimore and Sammons (1987); Mortimore, et al. (1988); Pajak and Glickman (1987); Purkey and Smith (1983); Slavin, Karweit, and Madden (1989); Stiggins (1991); Venezky and Winfield (1979); Weber (1971); Wilson and Corcoran (1988)

2.6.2 Administrators and Other Building Leaders Develop and Use Alternative Assessments.

Administrators and other leaders:
a. Engage schoolwide and community support for increased use of alternative assessments.
b. Ensure that alternative assessments align with curriculum and instruction.
c. Encourage teachers to incorporate alternative assessment practices in their classrooms.
d. Arrange for staff development activities to build alternative assessment skills, such as developing rubrics, establishing standards, designing performance tasks, and managing portfolio assessments.
e. Work with staff to systematize methods for collecting and reporting information produced by alternative assessments.
f. Collect and make available alternative assessment resources developed and used in other settings.

Baker (1992); Belk and Calais (1993); Calfee and Perfumo (1993); Costa and Kallick (1992); Haas (1990); Herman (1992); Hodges (1992); McMullen (1993); Newell (1992); Rafferty (1993); Shavelson and Baxter (1992); Shepard (1989); Telese (1993); Wiggins (1992)

2.7 SPECIAL PROGRAMS

2.7.1 Administrators and Teachers Identify Dropout-Prone Students and Implement Activities to Keep Them in School.[1]

Administrators and teachers:
a. Explore the possibility of housing dropout-prevention services in settings outside of schools.
b. Implement flexible programming and scheduling to accommodate students who are parents or who work during school hours.
c. Implement—or establish links with—programs to help dropout-prone students with school-to-work transitions.
d. Form partnerships with businesses in the community and promote community-based learning.
e. Secure input from dropout-prone students for designing dropout prevention/reduction activities.

[1] Effective practices for assisting dropout-prone students are much the same as those for supporting any high-needs student. The functions listed in this section are those additional practices with particular relevance to reducing the incidence of dropping out at the secondary level.

f. Provide students with learning activities that have real-world applications.

Baecher, Cicchelli, and Baratta (1989); Bickel, Bond, and LeMahieu (1986); Dryfoos (1990); Glaser, et al. (1992); Hergert (1991); Mayer (1993); Orr (1987); Paredes and Frazer (1992); Peck, N., Law, and Mills (1987); Presson and Bottoms (1992); Wehlage (1991); Williams, S. B. (1987); Woods (1995)

2.7.2 Administrators and Teachers Use Validated Practices for Tobacco, Alcohol, and Drug Prevention.

Administrators and teachers:

a. Begin prevention activities with students in the primary grades and continue them through high school. Programs for young children focus on positive self-regard and making healthy choices; those for older children include drug-specific activities.
b. Provide activities that move beyond giving information to influencing attitudes and behavior.
c. Use multiple strategies, including provision of accurate drug-related information in combination with training in general life skills, "refusal skills," understanding and resisting media pressure, and positive alternatives to drug use.
d. Incorporate at least some peer-led activities into prevention programs.
e. Provide periodic "booster" sessions after initial instruction, recapping major points and offering opportunity for discussion and role-playing.
f. Target some prevention activities to specific, high-risk groups—inner-city youth, girls, gay and lesbian youth, and emotionally disturbed and learning disabled students.
g. Focus more on short-term, personally meaningful consequences of substance use—bad breath from smoking, loss of driver's license, etc.—than on long-term health risks.
h. Know that "scare tactics" do not work and avoid using them.
i. Set and enforce clear policies regarding drug possession, use, or sale.
j. Provide aftercare support for students who have received alcohol or drug treatment or are involved in smoking cessation.
k. Enlist the support of parents and community members in designing and reinforcing the school's prevention program.
l. Collaborate with community agencies and volunteers to provide drug-free athletic and other activities for students.

Austin (1994); Bangert-Drowns (1988); Benard, Fafoglia, and Perone (1987); Cotton (1990a); DeJong (1987); Ellickson and Robyn (1987); Ertle (1994); Glynn (1983); Gold, Gold, and Carpino (1989); Goodstadt (1986); Harkin (1987); Johnson, E. M., et al. (1988); Kim, McLeod, and Palmgren (1989); Oei and Fea (1987); Pearish (1988); Polich, et al. (1984); Randall (1989); Schaps, et al. (1986); Singer and Garcia (1988); USDE (1992, n.d.); USDHHS (1987)

2.7.3 School Leaders and Staff Collaborate with Community Agencies to Support Families with Urgent Health and/or Social Service Needs.

School leaders and staff:

a. Learn about the array of medical and social service providers in the community and how to access them.
b. Learn about models for school-community collaboration for needy families that have been implemented in other settings.
c. Work with health and social service agencies to coordinate the delivery of services to children and families. Whether or not the school is the entry point for families to seek services is a matter of local preference.
d. Assist needy families to access appropriate health and social service facilities and providers in the community.

e. Identify needy children and families early in the children's school experience and work with community agencies on prevention and intervention activities.
f. Engage in true collaboration with community agencies by, for example, providing office space for a social service provider whose salary is paid by an external agency.

Ascher (1988, 1990); Bain and Herman (1989); Cohen, D. L. (1989); Comer (1986, 1988); Cotton (1992c); Cuban (1989); Fillmore and Valadez (1986); Gursky (1990); Guthrie and Guthrie (1991); Hodgkinson (1991); Madden, et al. (1993); McCurdy (1990); McPartland and Slavin (1990); Oakes (1987); Pollard (1990a,b,c); Sylvester (1990)

2.8 PARENT AND COMMUNITY INVOLVEMENT

2.8.1 Administrators and Teachers Involve Parents and Community Members in Supporting the Instructional Program.

Administrators and teachers:
a. Communicate repeatedly to parents that their involvement can greatly enhance their children's school performance, regardless of their own level of education.
b. Offer parents several different options for their involvement, e.g., tutoring their children at home, assisting in classrooms, participating in parent-teacher conferences, etc.
c. Strongly encourage parents to become involved in activities that support the instructional program.
d. Provide parents with information and techniques for helping students learn (e.g., training sessions, handbooks, make-and-take workshops, etc.).
e. Establish and maintain regular, frequent home-school communications. This includes providing parents with information about student progress and calling attention to any areas of difficulty.
f. Involve community members in schoolwide and classroom activities, giving presentations, serving as information resources, functioning as the audience for students' published writings, etc.

Armor, et al. (1976); Becher (1984); Block (1983); Brookover (1979); Cotton (1991b); Cotton and Wikelund (1989); Griswold, Cotton, and Hansen (1986); Gursky (1990); Hawley, et al. (1984); Henderson (1987); Levine and Stark (1981, 1982); Sattes (1985); Stevens (1985); Tangri and Moles (1987); Walberg, Bole, and Waxman (1980); Walson, Brown, and Swick (1983)

2.8.2 Administrators and Teachers Involve Parents and Community Members in School Governance.

Administrators and teachers:
a. Develop written policies which legitimize the importance of parent involvement and provide ongoing support to parent involvement efforts.
b. Communicate clearly to parents the procedures for involvement and use the procedures consistently.
c. Engage parent and community participation on school-based management teams.
d. Conduct vigorous outreach activities—especially in culturally diverse school settings—to involve parent and community representatives from all cultural groups in the community.
e. Make special efforts to involve the parents of disadvantaged, racial minority, and language minority students, who are often underrepresented among parents involved in the schools.
f. Work with cultural minority parents and community members to help children cope with any differences in norms noted between the home and the school.
g. Involve parents and community members in decision making regarding school governance and school improvement efforts.

h. Monitor and evaluate parent/community involvement activities and continually work to keep participation effective.
i. Publish indicators of school quality and provide them to parents and community members periodically to foster communication and stimulate public action.
j. Involve business, industry, and labor in helping to identify important learning outcomes and in providing opportunities to apply school learnings in workplace settings.

Baecher, Cicchelli, and Baratta (1989); Becher (1984); Boyd (1992); Cotton and Wikelund (1990); David (1989); Glaser, et al. (1992); Grobe (1993); McCarthy and Still (1993); Murphy (1988); New York SDE (1974); Pavan and Reid (1994); Sammons, Hillman, and Mortimore (1994); Stacey (1994); Stiller and Ryan (1992); Wang, Haertel, and Walberg (1993-1994); Williams and Chavkin (1989); Wilson, B. L., and Corcoran (1988)

3. DISTRICT CHARACTERISTICS AND PRACTICES

The district supports and monitors efforts toward improved student learning, delegating much of the responsibility for operations to the individual schools. Leadership and training in curriculum, instruction and assessment, together with positive district-sch[illegible]nteractions, create a climate conducive to successful teaching and learning.

3.1 LEADERSHIP AND PLANNING

3.1.1 District Leaders and Staff Hold and Communicate High Expectations for the Entire School System.

District leaders and staff:

a. Believe that all students can learn and that district educators have considerable influence on the level of student success. They communicate to all constituents that learning is the most important purpose of schooling.
b. Establish and protect goals and priorities for improvement. They make goals and priorities highly visible throughout the school community, particularly through efforts of the superintendent. Goals focus on improving student performance.
c. Work with one another and with school personnel for the benefit of students; they review all proposals for action in terms of their potential effect on students.
d. Establish plans and activities that focus on improving instructional effectiveness, and communicate the expectation that instructional programs will be improved over time.
e. Review recruitment, selection, and promotion policies periodically to assure that creative, innovative building administrators are hired and retained.
f. Make use of proven practices to recruit and retain excellent teachers, including teacher mentoring, rich inservice opportunities, and hiring members of cultural minorities, particularly in culturally diverse settings.
g. Establish and maintain good communication with the school board regarding progress on school improvement plans.

Boone (1992); Corbett and Wilson (1992); Everson, et al. (1986); Hallinger and Hausman (1993); Hallinger, Bickman, and Davis (1989); Levine (1990); Levine and Lezotte (1990); Lomotey (1989); Louis and Miles (1989); Miller, Smey-Richman, and Woods-Houston (1987); Murphy and Hallinger (1986, 1988); Odell and Ferraro (1992); Pajak and Glickman (1987); Pine and Hilliard (1990); Purkey and Smith (1983); Schlechty (1985); Wilson, B. L., and Corcoran (1988)

3.1.2 District Leaders and Staff Establish Policies and Procedures that Support Excellence and Equity in Student Performance.

District leaders and staff:

a. Hold and communicate the conviction that all children can be successful learners; those in culturally diverse districts regard their diversity as a strength.
b. Review district policies periodically to determine the effect they have on student performance. They strengthen policies as needed to increase support for specific district goals and for improving student performance and equity.
c. Establish policies and procedures that focus on improving student performance and require ongoing improvement efforts at every level in the district. They establish guidelines that provide a framework for action, rather than mandating specific steps.
d. Establish policies which foster the development of clear goals in each school building and work with school staffs to translate these into measurable results.
e. Encourage and support school-based management. They share decision making regarding budget, staffing, and curriculum with school leaders.

f. Require schools to generate action plans for improvement and carry them out. District administrators communicate the expectation that building principals serve as instructional leaders.
g. Establish and enforce expectations for participation in improvement efforts; building administrators are included in district planning activities.
h. Review regulations and requirements governing construction, remodeling and maintenance of school facilities to ensure that optimal physical environments are provided for teaching and learning.
i. Use their knowledge of research to guide policy development and school monitoring. They avoid (or discontinue) the use of district or school practices that conflict with the findings of well-designed research.

Biester, et al. (1983); David (1989); Dentler (1994); Everson, et al. (1986); Fullan (1993); Jackson and Crawford (1991); Jacobson (1988); Levine (1990); Levine and Lezotte (1990); Libler (1992); Murphy, et al. (1987); Paredes and Frazer (1992); Peterson, Murphy, and Hallinger (1987); Purkey and Smith (1983); Schlechty (1985); Wilson and Corcoran (1988); Wohlstetter, Smyer, and Mohrman (1994)

3.2 CURRICULUM

3.2.1 District Leaders and Staff Conduct Careful Curriculum Planning to Ensure Continuity.

District leaders and staff:

a. Establish frameworks, guidelines, and quality standards to unify curriculum planning districtwide. They ensure that curriculum and instructional planning is consistent at the district, school, and classroom levels.
b. Work with schools to identify a limited number of priority objectives to clarify what students should learn. They sequence the objectives by grade level; review them for technical quality, specificity, and clarity; and target them for students by developmental level.
c. Identify learning materials, available space, and special facilities, staff and other instructional resources and catalogue them by objective or goal area.
d. Match resources to learning objectives and student developmental levels and check them for accuracy and alignment. They also identify validated instructional strategies, especially for high-priority objectives.
e. Conduct districtwide curriculum alignment and review efforts to ensure high quality of instruction and consistency across schools.
f. Provide direct support for building and classroom curriculum efforts; superintendents, in particular, take an active role in collaborating with schools on curriculum and instruction.
g. Provide support for integration of traditional subject areas, including consultation assistance, planning time, resources, and training.

Behr and Bachelor (1981); Corbett and Wilson (1992); David (1989); Denham and Lieberman (1980); Everson, et al. (1986); Hord and Huling-Austin (1987); Miller, R., et al (1987); Murphy and Hallinger (1986, 1988); Odell and Ferraro (1992); Pajak and Glickman (1987); Valadez and Gregoire (1989); Wilson, B. L., and Corcoran (1988)

3.3 DISTRICT-SCHOOL INTERACTIONS

3.3.1 District Leaders and Staff Delegate Considerable Decision-Making Authority to Schools.

District leaders and staff:

a. Work with schools to establish broadly representative school-based management teams that draw their membership from administrators, teachers, students, non-certified staff, parents, and community members.
b. Make themselves available to provide training, research-based information, and on-site assistance to help schools to implement school-based management.
c. Provide clear guidelines to school teams about their role and the extent of their authority, information about school operations and budgets, and skills training in group processes such as decision making and conflict resolution.
d. Provide resources, such as time and financial support for planning and carrying out team activities.
e. Ensure that team members have genuine decision-making power.
f. Increase schools' latitude for decision making through helping them to have state and local regulations waived as appropriate.
g. Involve teacher union representatives in discussions of school-based management, which increases their willingness to be flexible about contract constraints.
h. Assist schools to evaluate and modify their school-based management structures based on continuous review of program activities and their effects.

Arterbury and Hord (1991); Caldwell and Wood (1988); Ceperley (1991); David (1989); David and Peterson (1984); Davidson, B. M. (1993); Duttweiler (1990); English (1989); Fullan (1993); Hall (1992); Henderson and Marburger (1990); Hord (1992b); Levine and Eubanks (1989); Lewis (1989); Libler (1992); Malen and Ogawa (1988); Malen, Ogawa, and Kranz (1990a,b); Mojkowski and Fleming (1988); Murphy and Hallinger (1993); Mutchler (1989); Odden and Wohlstetter (1995); White, P. A. (1989)

3.3.2 District Leaders and Staff Encourage, Support, and Monitor School Improvement Efforts.

District leaders and staff:

a. Delegate much of the responsibility for school improvement to principals and school site management groups, while at the same time providing guidance and support for school improvement efforts.
b. Acquaint site management groups with promising practices from inside and outside the district, encourage their use, and work with building staffs to implement practices selected.
c. Monitor implementation of policies and procedures in individual schools, providing advice, clarifications, technical feedback, and support services. They pay particular attention to the progress of improvement efforts.
d. Assist local schools in their improvement efforts by providing consultation, materials development, and training assistance as requested by building personnel.
e. Establish a resource pool for building-level improvement projects. Departmental budgets include resource items specifically related to the attainment of district goals and priorities.
f. Provide principals and school staffs ongoing programs of staff development focused on strengthening instructional leadership skills, and strongly encourage them to pursue other professional development activities.
g. Protect schools from political or economic turbulence which might disrupt classroom instruction.

Berman and McLaughlin (1979); Biester, et al. (1984); Boone (1992); Corbett and Wilson (1992); David (1989); Everson, et al. (1986); Gersten, Carnine, and Zoref (1986); Hord (1992); Huberman

and Miles (1984a); Jackson and Crawford (1991); LaRocque and Coleman (1988); Levine and Lezotte (1990); Levine and Stark (1982); Louis and Miles (1989); Miller, R., et al. (1987); Murphy, et al. (1987); Murphy and Hallinger (1993); Pajak and Glickman (1987); Peterson, Murphy, and Hallinger (1987); Purkey and Smith (1983); Schlechty (1985); Stringfield (1995); Wilson and Corcoran (1988)

3.3.3 District Leaders Recognize and Reward Excellence.

District leaders:

a. Use clear, negotiated criteria for supervision and evaluation of building administrators. Superintendents personally supervise and evaluate principals whenever possible.
b. Establish award programs for schools, administrators, teachers and students and take a visible role in recognizing excellence. District award programs complement school award programs.
c. Base awards on contributions staff have made to improving student performance. They use agreed-upon criteria for determining award recipients, rather than comparison to peers.
d. Make certain that district monitoring of school operations and improvement efforts is accompanied by recognition of successes.

David (1989); Everson, et al. (1986); Louis and Miles (1989); Miller, R., et al. (1987); Murphy and Hallinger (1988); Murphy and Peterson (1985); Murphy, et al. (1987); Odell and Ferraro (1992); Wilson, B. L., and Corcoran (1988)

3.3.4 District Leaders Assist Schools to Carry Out Prevention Activities and to Support High-Needs Students and Families to Access Needed Services.

District leaders:

a. Work with schools to develop and implement firm discipline policies.
b. Help school staff to create positive climates that can help reduce the incidence of illegal and/or disruptive behavior.
c. Arrange training for school staff in developing and implementing prevention programs for dropout, pregnancy, drugs, gangs, and violence.
d. Stand behind schools as they enforce policies regarding illegal and/or disruptive activities.
e. Assist schools in identifying and building linkages with social service and health agencies to support high-needs students and their families.
f. Help schools to identify appropriate placements for students who are not able to function well in the regular school environment, e.g., school-within-a-school.

Baecher, Cicchelli, and Baratta (1989); Barnes (1984); Benard (1991, 1993); Cohen, D. L. (1989); Cotton (1990a, 1992c); Driscoll (1990); Fenley, et al. (1993); Murray and Mess (1986); Sylvester (1990); Wilson-Brewer, et al. (1991); Woods (1995)

3.4 ASSESSMENT

3.4.1 District Leaders and Staff Monitor Student Progress Regularly.

District leaders and staff:

a. Collect and summarize information about student performance on a regular basis, identify areas of strength and weakness. and prepare and share reports throughout and community, giving special emphasis to priority goals and objectives.
b. Coordinate assessment efforts to ensure quality, avoid duplication of effort, and minimize disruption of classroom instruction.

c. Check alignment among tests, curriculum, and instruction regularly and work with schools to improve it.
d. Conduct district-level assessments, with major tests announced well in advance to facilitate building and classroom scheduling. They establish and use specific routines for scoring, storing, reporting, and analyzing results, and report results quickly.
e. Use assessment results to evaluate programs and target areas for improvement.
f. Provide direct support for building- and classroom-level assessment efforts.

Behr and Bachelor (1981); Everson, et al. (1986); Hord (1992); Hord and Huling-Austin (1986); Levine and Lezotte (1990); Levine and Stark (1982); Murphy and Hallinger (1986, 1988); Murphy, et al. (1987); Pajak and Glickman (1987)

3.4.2 District Leaders and Staff Support Schools' Development and Use of Alternative Assessments.

District leaders and staff:
a. Make district support of alternative assessment practices known throughout the district and its community.
b. Provide staff development for building skills needed for designing, administering, and scoring alternative assessments.
c. Develop and maintain a districtwide "tool kit" of exemplary tasks, task templates, and design criteria for tasks.

Baker (1992); Belk and Calais (1993); Wiggins (1992)

Effective Schooling Research Bibliography

Introduction

Literature related to effective schooling has been gathered together in this bibliography. Research reports, syntheses, meta-analyses, reviews, and analytical commentaries are included. References listed in the preceding section, plus many others, can be found here in full bibliographic form.

For those who wish to delve more deeply into topics addressed in the preceding pages, but do not have time to read every document cited in the bibliography, we have identified an array of high-quality summaries and reviews. These are marked with an asterisk (*).

Finally, we need to remind readers that this bibliography is not comprehensive. While we believe that the core of the literature is well represented, some studies not cited here may well be important in furthering the understanding of educational effectiveness.

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SCHOOL IMPROVEMENT RESEARCH SERIES
"Research You Can Use"

Close-Up #17

Reducing the Dropout Rate

E. Gregory Woods

Increasingly, it is being recognized that the issues of dropping out and dropout prevention cannot be separated from issues affecting our total economic and social structure. These issues include poverty, unemployment, discrimination, the role of the family, social values, the welfare cycle, child abuse, and drug abuse.

--Peck, Law, and Mills 1987, p. 3

Introduction

School Completion, Goal 2 of the National Goals for Education, states: "By the year 2000, the high school graduation rate will increase to at least 90 percent." This high-visibility goal spotlights a problem which has persisted for over two decades. Youth who drop out of school are predicted to be an even larger problem in the future (OERI 1987).

Dropping out is a complex social problem for which there is no simple solution. Focusing attention on fixing one part of the problem calls attention to the need for solutions to many other parts as well. Thus, many educators and others concerned with the dropout problem are advocating policies involving a broad range of institutions and agencies (e.g., Hargroves 1987).

Definition

Who are America's dropouts? Different definitions of dropouts, different time periods during the school year when dropout data are collected, different data collection methods, different ways of tracking youth no longer in school, and different methods used by school districts and states to calculate the dropout rate, result in unreliable aggregated national dropout figures.

Various ways of calculating the dropout rate reveal different ways of thinking about the issue. *Event rate* indicates the number of students who leave high school each year and is compared with previous years. *Status rate*, a cumulative rate much higher than the event rate, denotes the proportion of all individuals in the population who have not completed high school and were not enrolled at a given point in time. *Cohort rate* describes the number of dropouts from a single age group or specific grade (or cohort) of students over a period of time. The *high school completion rate* indicates the percentage of all persons ages 21 and 22 who have completed high school by receiving a high school diploma or equivalency certificate.

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The Problem

OVERVIEW

The 1993 National Education Goals Report indicates that there has been little if any progress on Goal 2. The high school completion rate among 19- to 20-year-olds has remained relatively stable since a marked increase in the early 1980s. Whatever the exact number, the high incidence of dropping out poses a serious problem to the social and economic health of the country and negative consequences for the individual dropout (Asche 1993).

As noted by Carson, et al. (1991), the number of dropouts is not really the issue. The point is that the world has changed, and the system's current employment needs do not tolerate dropout rates that have not changed over the last 20 years. Consequences of dropping out, which are identified in the work of Arndt (1994), Asche (1993), and the General Accounting Office (1987), include the following:

- As the pool of dropouts continues to grow, employment opportunities for them are more limited, because today's economy requires of the labor force increased literacy, more education, enhanced technological skills, and lifelong learning.
- The rate of engagement in high-risk behaviors such as premature sexual activity, early pregnancy, delinquency, crime, violence, alcohol and drug abuse, and suicide has been found to be significantly higher among dropouts.
- Dropouts are more likely than other citizens to draw on welfare and other social programs throughout their lives.
- Income differences between dropouts and other citizens can be expected to widen as the economy evolves, "pitting Americans with less education against computerized machines and people in low-wage nations" (Arndt 1994).
- A growth of unskilled laborers in low-wage jobs will increase the trend toward developing a large American underclass which "some analysts argue...threatens the continuing existence of a democratic way of life" (Asche 1993, p. 13).

As summarized by the General Accounting Office (1987), the social costs of the dropout problem include an underskilled labor force, lower productivity, lost taxes, and increased public assistance and crime.

RISK FACTORS

J. A. Asche (1989) states that:

> Based on a thorough analysis of the research literature, Wells and Bechard (1989) identified four major categories of factors that contribute to a student profile of characteristics that may lead to a student's dropping out of school. The four categories list risk factors that are school-related, student-related, community-related, and family-related. The likelihood of a student dropping out of school increases as the combination of risk factors becomes more multifaceted. (p. 10)

Poor academic performance is the single strongest school-related predictor of dropping out (OERI Urban Superintendents Network 1987; Hess, et al. 1987; Wood 1994). The most recent Department of Education annual dropout report relates that students who repeated one or more grades were twice as likely to drop out than those who had never been held back, and those who repeated more than one grade were four times as likely to leave school before completion.

Student-related risk factors include personal problems independent of social/family background. Substance abuse, pregnancy and legal problems are frequently reported along with school-related problem behaviors such as truancy, absenteeism, tardiness, suspension, and other disciplinary infractions.

Parents play a crucial role in keeping young people in school. The degree and nature of family support are determined by such factors as a stressful/unstable home life, socioeconomic status, minority membership, siblings' completion of high school, single-parent households, poor education of parents, and primary language other than English (Horn 1992).

Lest these correlations be misunderstood, it is also important to point out that, of the com-

munity-related factors, it is poverty that is the strongest predictor of dropping out. "When socioeconomic factors are controlled, the differences across racial, ethnic, geographic, and other demographic lines blur" (OERI Urban Superintendents Network 1987, p. 5).

Researchers have also found that working can contribute to a student dropping out. Some research shows that student employment begins to correlate with dropping out when the student regularly works over 14 hours per week (Mann 1986, 1987). Other research places the critical level for employment higher, at 20 hours per week (Winters 1986), with the likelihood of dropping out increasing with the number of hours worked.

The Literature on Dropout Prevention

Findings cited in this report are drawn from the 26 documents listed in the "Key References" section of the bibliography. Of these, six are studies, thirteen are reviews, and seven are syntheses of findings on school dropouts.

Looking at the subjects of the research, twelve reports focus on addressing the dropout problem at the high school level, and six are concerned with potential dropouts/students at risk in grades K-12. Subjects in the remaining reports were (1) the age range from 2 to 29, (2) dropouts in general, (3) high school graduates, (4) middle and junior high school students, (5) black high school graduates and dropouts in an urban setting, (6) Hispanic and language minority students, and (7) parents and the community.

PRACTICES AND OUTCOMES INVESTIGATED

The kinds of school practices investigated in relation to dropout rates include (1) data collection and tracking of at-risk students and dropouts, (2) group behavioral therapy, (3) variables that are instructionally effective with students from low-income backgrounds, (4) in-school factors that might influence dropout rates, (5) collaborative efforts between schools and communities on dropout prevention programming, (6) grading practices, (7) parental involvement, and (8) entering high school overage.

The outcome areas of interest to researchers in these analyses include (1) reduced dropout rates/increased retention of dropout-prone students, (2) behavioral changes leading to academic progress, (3) identifying characteristics of dropouts, (4) school-controllable factors influencing dropping out, and (5) variables that distinguish graduates from nongraduates.

Other topics examined by those whose work was consulted for this analysis include (1) attendance and factors affecting it, (2) characteristics of effective schools, (3) pupil information files and record keeping on school dropouts, (4) parents' views of alternative programs, (5) the relative importance of programmatic specialization in school selection decisions, (6) legislative efforts to increase school retention and graduation rates, (7) demographic correlates, (8) the value of the GED certificate relative to a high school diploma, (9) second-chance programs, (10) the history of school completion/enrollment in the U.S., (11) methods of evaluating the success of dropout prevention programs, (12) the factors associated with youth returning to school, (13) the similarities between effective schools and successful dropout reduction programs, (14) schools as High Reliability Organizations (HROs), and (15) educational indicators comparing the phenomenon of dropping out in the U.S. and other nations.

Elements of Successful Programs

Research findings regarding the characteristics of effective dropout prevention programs are grouped below under five headings: Organization/Administration, School Climate, Service Delivery/Instruction, Instructional Content/Curriculum, and Staff/Teacher Culture.

ORGANIZATION/ADMINISTRATION

The way in which a school or program is set up and administered has been found to impact retention of at-risk students and the dropout rate. The following components of the organization and administration of schools and programs serving dropout-prone youth have been identified in the work of Bickel, et al. (1986); Dryfoos (1990); The Dropout Information Clearinghouse (1989); Smink (1990); Peck, et al. (1987); and Asche (1993).

Size and location of the school or program play a role in dropout prevention. Creating schools-within-schools has been found to be effective in countering the high dropout rates associated with many large high schools. Small program size and a low student/teacher ratio are particularly beneficial. Alternative schools designed to serve at-risk populations of students have been successful, as has the practice of locating dropout prevention programs outside of schools in nontraditional settings in the community.

Additional elements of successful programs include: (1) administration of programs by agencies outside of schools; (2) school-based management; (3) a focus on instructional leadership on the part of the principal; (4) fair but uncompromising discipline programs; (5) flexible programming and scheduling; (6) community and business collaboration; (7) staff selection and development; (8) transition programs; (9) definition and accounting procedures regarding dropout-prone students; (10) early intervention efforts; (11) schoolwide agreement on goals, objectives, and rules; (12) teacher autonomy; (13) reducing suspensions and retentions; (14) eliminating tracking; (15) involving community role models; (16) promoting business partnerships and community learning; and (17) developing collaboration between high schools and colleges.

SCHOOL CLIMATE

Attention to overall school climate is supported in the work of Bickel, et al. (1986); The Dropout Information Clearinghouse (1989); Smink (1990); Peck, et al. (1987); Wehlage (1991); and Asche (1993).

A climate characterized by safety and orderliness in a location that is accessible and nonthreatening can make a powerful contribution to dropout prevention. Positive enhancements include staff inservice to increase intercultural sensitivity and involving parents in school activities as steps to building a "family" atmosphere. A lower incidence of dropping out was also noted in environments where students were actively involved in the design of the program. Such involvement appears to increase their commitment and the perceived relevance of the program in their eyes.

SERVICE DELIVERY/INSTRUCTION

A common thread which runs through successful dropout prevention programming is that it is student centered. No one structure or set of activities works for all students. A variety of strategies in various combinations should be used to address the entire range of student needs or factors that alienate them from school. The following service delivery/instruction elements have been identified as effective in the work of Peck, et al. (1987); Asche (1993); Orr (1987); Wehlage (1991); Bickel, et al. (1986); Dryfoos (1990); The Dropout Information Clearinghouse (1989); and Smink (1990).

Research supports the practice of identifying potential dropouts as early as possible and providing intensive intervention to insure early success. Involving families as much as possible and soliciting parental assistance is also related to success. Intensive individualized attention and instruction, including the use of tutoring and mentoring programs, and instruction technologies are recommended. In addition, successful programs are characterized by instruction and management in which there are clear instructional objectives, activities that are tied to the objectives, and close monitoring of student progress.

The researchers also noted greater success when programs included supportive services such as day care and opportunities to make up work via summer and night school and correspondence. Effective programs characteristically feature student assistance services to address substance abuse, teen pregnancy and young parenthood, suicide prevention, and other mental and physical health issues.

INSTRUCTIONAL CONTENT/ CURRICULUM

Curricular components related to dropout reduction are identified in the work of Orr (1987); Bickel, et al. (1986); Dryfoos (1990); The Dropout Information Clearinghouse (1989); and Asche (1993).

Early childhood education/preschool and quality kindergarten programs are strongly supported, as is English as a second language and bilingual education. In general, a mix of academic instruction and experiential learning appears to be most beneficial. Successful instruction includes concentrated reading and

writing activities, basic skills remediation, test-taking skills, self-esteem building, social skills training, and parenting skills. Learning content with real-world application has been shown to enhance students' interest and involvement.

Links to the world of work in successful programs include goal setting, vocational skills, job training, work study, work attitudes and habits, and career counseling. In addition, summer enhancement programs are effective motivators and remediation opportunities.

STAFF/TEACHER CULTURE

Findings regarding staffing for effective dropout prevention programs are found in the work of Bickel, et al. (1986); Asche (1983); Peck, et al. (1986); and The Dropout Prevention Clearinghouse (1989).

In successful programs staff members are committed to program success and hold high expectations for student academic achievement and behavior. Caring adults deal with the "whole child," showing interest and concern. A climate of collegiality exists among staff and extends to engendering a sense of belonging in children and their families.

INEFFECTIVE PRACTICES

Research which has yielded information on effective dropout prevention practices has also produced findings about ineffective practices. Unfortunately, these practices can still be found. Ineffective practices identified in the work of Dryfoos (1990) include:

- State-mandated promotion policies. If standards and requirements are raised without support for school improvement and without personal attention to the varied populations of high-risk students and their specific learning requirements, the effect will be to push more young people out of school.
- Ability grouping. Students' self-concepts suffer as a result of labeling them average or below. Placement in lower ability groups is associated with lower teacher expectations and reduced learning.
- Early intervention without follow-up.
- Basic skills teaching by itself.
- Work experiences and on-the-job training with no other interventions. There is need for some kind of individual attention or mentoring as well.
- Grafting additional staff and programs onto existing ineffective structures, e.g., extending the school day or adding more courses.
- Increasing the number of attendance officers to cut down on truancy.

Specific Programs

The programs described below have been evaluated and found to be successful as measured by reduced dropout rates and increased school completion rates. Not included are the numerous programs which serve the population of preschool through the early elementary grades.

- **The Adopt-A-Student Program,** operating in Atlanta, Georgia since 1983, pairs business volunteers as mentors with low-achieving high school juniors and seniors in a career-oriented support system. Students are helped to think about future employment, identify occupational interests, and begin taking steps to get a job that matches them. One result has been an increase in the graduation rate in contrast to a comparison group of nonparticipants. (Orr 1987; Dryfoos 1990)
- **Project Coffee** in Oxford, Massachusetts targets potential dropouts from 16 regional school districts. Components of the program include: comprehensive vocational instruction, integration of academics and occupational training, counseling, job training and work experience, and a school-business and industry partnership. Outcomes include improved attendance, increased basic skills competencies, and a lower dropout rate. (Orr 1987)
- **Rich's Academy**, located in a major downtown Atlanta, Georgia department store, is an alternative high school serving former dropouts and near dropouts. The program, in which volunteers play a vital role, is administered by Exodus, Inc., an

Atlanta-based nonprofit corporation. Students are placed at random into "family groups" of 20-30 members that meet daily for group counseling and mutual support. Staff members provide supportive counseling and referrals in the "extended day" program which runs until 6:00 p.m. Parents are encouraged to participate, and the staff visit each student's home at least once to share the program objectives. The completion rate is 85 percent, with all graduates going on to jobs or postsecondary school. (Orr 1987)

- **The Alternative Schools Network** in Chicago, Illinois targets neighborhood school dropouts. Community-based alternative schools and youth centers provide a structured program of education, including GED preparation, employment preparation, job training and counseling. The program illustrates an effective way for community-based organizations to target the needs of youth dropouts in their neighborhoods and to work together in raising funds and designing a focused program. A 60-70 percent high school/GED completion rate has been reported. (Orr 1987)

- **Washington State-Funded Educational Clinics** are local centers designed to provide short-term educational intervention services to dropouts aged 13-19. In addition to basic academic skills instruction taught in small groups or individually, the clinics provide employment orientation, motivational development, and support services. Sixty-six percent of the students successfully complete the program by obtaining a GED, transferring into another educational program, or obtaining full-time work. (Orr 1987)

- **City-As-School (CAS)** is an independent alternative high school program that combines academic learning with the world of work for students in New York City. Students learn in specialized small classes which utilize community resources of a business, civic, cultural, social or political nature. Weekly seminar groups serve as a forum for discussions of guidance, academic and social issues. Evidence of program effectiveness is an increase in the course completion rate of students. (NDN 1993)

- **The Coca-Cola Valued Youth Program** features cross-age tutoring designed to reduce the dropout rates among middle school children who are limited-English-proficient and at risk of leaving school. Commitment is created by involving students and parents with teachers in setting goals, making decisions, monitoring progress, and evaluating outcomes. The support strategy includes coordination and family involvement. Student tutors participating in the program have a significantly lower dropout rate than the comparison group and national rates. In 1992, the program was recognized by the Secretary of Education as a model dropout prevention program, meeting the National Education Goal No. 2 of increasing the high school graduation rate to at least 90 percent. (NDN 1993)

- **The Lincoln Educational Alternative Program (LEAP)** in Wisconsin Rapids, Wisconsin is an alternative educational program nested within a larger, traditional high school. For juniors who are "credit deficient and unlikely to graduate," this two-semester program combines intense academic and counseling work on social as well as academic skills. Classes are small, and there is a conscious effort to build group unity among the students involved. Improved rates of graduation are reported among participants. (Bickel, et al. 1986)

- An example of a systemwide, multi-component program to reduce the dropout rate operates in **School District 60 in Pueblo, Colorado**. The schools serve a working-class community where half the students are Hispanic. Early identification and intervention (as early as preschool) are high priorities, facilitated by a computerized tracking system. The program involves parents, and mentoring by volunteer adults and peers is stressed. Components include a teen mother program and a program for dropout reentry for all students. Rules on suspension have been changed: students who commit minor disciplinary offenses are isolated for up to five days and monitored by a supervisor. Resource teachers spend their time counseling and supporting students and their families. The dropout rates fell significantly in the school system during the two-year period reported. The reten-

tion rate for Hispanics showed marked improvement, with greater changes than those noted for other students. (Dryfoos 1990)

- **Upward Bound**, a national program in operation since 1965, provides academic and other kinds of assistance to economically disadvantaged, underachieving students who show potential for completing college. Colleges and universities or secondary schools with residential facilities operate Upward Bound programs in cooperation with high schools and community action programs. Intervention strategies include: remedial instruction, immersion in new curricula, tutoring that often extends into the school year, cultural enrichment activities, and counseling. During summer sessions students reside in campus housing and undergo intensive training for six weeks or longer. Evaluations of the program conclude that Upward Bound is successful in getting students to graduate from high school. (U.S. Department of Education 1993)

- At **George Washington Preparatory High School,** located in south-central Los Angeles, both parents and students are required to sign a contract. Parents must attend workshops on how to help their children and must visit the schools at designated times. Teachers must make daily calls to the homes of absentees. Absenteeism was less than 10 percent in the 1985-86 school year, and 70 percent of the students now go on to college. (U.S. Department of Education 1993)

- **The New York City Dropout Prevention Program** focuses on the transition from junior high to senior high school, a stress point in the lives of adolescents that contributes to dropping out. The high schools have become social institutions which provide help for students and their families. Using a team approach, the resources of public and private agencies provide adolescents with support. Parents are an integral part of the program and are considered central to success. Overall, the philosophy is to provide adolescents with caring adults who understand their needs and who will support them. Implemented practices include flexible schedules, job development and placement for seniors, incentives for those who show effort and achievement, part-time employment that helps students achieve the transition from school to work, and tutoring and mentoring of younger at-risk students by older ones. Two years after the program was put into place the dropout rate went from 42 percent in 1985 to 30 percent in 1987. (U.S. Department of Education 1993)

Recommendations

Based on the research they have conducted and analyzed, researchers have offered recommendations for holding at-risk students longer in school and reducing the dropout rate. These recommendations are a synthesis based on the work of the 1993 National Education Goals Report; Goal 2 Work Group (1993); School Superintendents and U.S. Department of Education (1990, 1993); Dryfoos (1990); Wehlage (1991); Winters, et al. (1988); Peck, et al. (1987); Presson and Bottoms (1992); and Conrath (1986).

NATION/STATES/CITIES

1. Implement a consistent nationwide record-keeping system that will allow comparable state high school completion and dropout data to be reported on a regular basis.

2. Design and support research that informs educators and the public about those aspects of students' experiences that determine whether or not these students complete secondary school. Move toward developing and advancing theoretical concepts that treat retention, graduation and school completion as consequences of a dynamic interaction of such variables as student characteristics, school context, occupational prospects, and cultural influences, and that represent dropouts as students who are part of a social world and who interact with the people and institutions that surround them. Such theories offer a rationale for dropout programs based on the motivating properties of students' lives and for future research and design of dropout prevention programs.

3. Develop state policy requiring each school system to establish a management infor-

mation system (MIS) that provides basic and common data on all students.

4. Develop state policy requiring schools to examine the effects of course failure, grade retention, out-of-school suspension, and other practices that appear to impact at-risk students negatively.

5. Establish state and local policies encouraging the decentralization of large schools and school systems, creating smaller units characterized by site-based management.

6. Establish state and local policies encouraging the development of new curricula and teaching strategies designed for diverse groups of at-risk students.

7. Develop state and local policies holding schools accountable for their dropout rates through a system emphasizing outcomes and results.

8. Develop broad-based community partnerships aimed at serving at-risk youth.

DISTRICT

1. Make school dropouts a districtwide concern, and focus on changing institutions rather than changing individuals.

2. Intervene early. The timing of interventions is critical, i.e., in preschool and middle school. Continuity of effort must be maintained.

3. Set and communicate high expectations.

4. Select and train teachers who are interested in working with at-risk students.

5. Recognize that there is no one solution to this problem; risk factors are interrelated. Provide a broad range of instructional programs to accommodate students with different needs.

6. Provide a package of services within each community. Work with families, churches and other community organizations to develop a collaborative program for dropout prevention. "The strongest area of agreement [between experts' opinions and program practices] is in the efficacy of collaborative, communitywide multi-component programs using a variety of approaches" (Dryfoos 1990, p. 34).

7. Encourage and support programs that motivate parents to participate at all levels of their children's education.

8. Establish strong permanent alternatives as part of a comprehensive strategy of dropout prevention. Alternative schools should be high-status organizations, receiving resources commensurate with the tasks they undertake and the success they demonstrate.

9. Develop and implement a collection system for data on dropouts, and use it to identify groups at risk, set policy and fund programs at the national level.

10. Train staff in methods for identifying at-risk youth.

11. Focus on a team approach for working with at-risk youth.

12. Develop model programs with parents, teachers, business, government, and community participation.

13. Educate children to meet the changing demands of a technological society, not just to get a job in today's market.

14. Provide curriculum that is process oriented as well as content oriented.

15. Strengthen model programs for disadvantaged youth by providing a summer component.

16. Conduct broad-based needs assessment and planning efforts that include parents, students, businesses, and social agencies working with youth and community organizations, as well as teachers and school administrators.

17. Provide dropout prevention activities for all levels, K-12, with an emphasis on early intervention.

18. Review and revise as necessary organizational variables, policies and procedures affecting the school's ability to meet the needs of high-risk youth. This should include review of student-teacher ratios,

discipline policies and procedures, absenteeism, truancy, suspension, failing grades, and retention policies.

19. Expand networking as the capacity to create linkages across groups. The dropout problem is a community, business, economic and social problem.

20. Select staff based not only on subject area competency, but also on the ability and desire to provide a respectful caring environment that responds to the needs of the whole child.

22. Build into the program ongoing staff development as well as evaluation and feedback.

SCHOOL

1. Identify, target, and monitor potential dropouts early in their high school careers, and continue monitoring their progress as they move through high school.

2. Establish high basic competency expectations for targeted potential dropouts.

3. Enroll targeted potential dropouts in a planned program of vocational and academic study.

4. Use applied instructional strategies to teach basic competencies.

5. Expand targeted students' personal views of their career and education potential and opportunities.

6. Use an interdisciplinary team of vocational, academic, and support personnel to plan and monitor curriculum and to provide extra instructional support to targeted students.

7. Implement a program of personal attention and extra instructional support to targeted students.

8. Involve business and community leaders in retaining students in school and advancing basic competencies of targeted students.

9. Involve parents. Research conducted by staff of the Southwest Educational Development Laboratory states that some parent involvement programs have produced effects on student achievement "ten times as large as that of socioeconomic status."

10. Reassess the relevance of all educational programs which should reflect students' current and longer-term social and economic interests.

11. Make a positive school climate and positive relationships high priorities in the school and in the classroom. Students need to feel attached to school as a supportive community that recognizes their individuality and that cares about and promotes their success.

12. Students at risk need to have their efforts at school work recognized and rewarded.

13. Address conditions beyond school as feasible and appropriate. Students' out-of-school problems often need to be addressed before they can succeed academically.

Conclusions

There is no one magical, quick fix solution to the dropout problem. The problem is complex and requires a complex array of solutions. Dropouts have dissimilar characteristics and therefore need different kinds of programs which respond to their individual circumstances and needs. Programs, to be effective, need to provide one-on-one intensive attention to at-risk students, who often must be convinced that they are competent and can be successful in school. The curriculum should include basic educational skills, social skills, and experiential education. In addition, the interrelated causes and multiple problems associated with dropping out call for comprehensive communitywide, multi-service approaches and multi-component programs if Goal 2 is to be achieved.

Children at risk need to be identified at a young age (as early as preschool) so that early sustained intervention can be applied. Success in the elementary grades diminishes the possibility of later dropping out in high school. The key to reducing the dropout rate is helping youth to overcome their sense of disconnectedness. It is imperative not to

isolate or alienate any students from the school.

Not all factors related to dropout reduction are school controllable, and solutions to the complex problem of dropouts cannot be achieved by the schools alone. It is a national problem which must be addressed by the whole society. It requires resources that go beyond the school, and solutions require a team approach--the combined efforts of students, parents, teachers, administrators, community-based organizations, and business, as well as the federal, state, and local governments.

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Steinberg, L.; Blinde, P. L.; and Chan, K. S. "Dropping Out Among Language Minority Youth." *Review of Educational Research* 54/1 (1984): 113-132.

Discusses evidence concerning dropping out among language minority youth. The combination of socioeconomic disadvantage and early academic failure appears to contribute to the higher dropout rate of language minority youngsters. Four hypotheses are discussed regarding the higher dropout rate of language minority Hispanic students compared with other non-English-speaking population groups.

Valverde, S. A. "A Comparative Study of Hispanic High School Dropouts and Graduates: Why Do Some Leave School Early and Some Finish?" *Education and Urban Society* 19/3 (1987): 320-329.

Compares various groups of Hispanic students in terms of school completion to determine the factors associated with completing school and with dropping out.

Walz, G. R. *Combating the School Dropout Problem: Proactive Strategies for School Counselors.* Educational Resources Information Center/Counseling and Personnel Services Clearinghouse, 1987 (ED 287 112).

Describes findings from the dropout research and provides a list of strategies for improving school retention.

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SCHOOL IMPROVEMENT RESEARCH SERIES
"Research You Can Use"

Close-Up #18

Peer and Cross-Age Tutoring

Page Kalkowski

Introduction

It is likely that peer and cross-age tutoring have been part of human existence since hunter-gatherer times. As Jenkins and Jenkins write, "Tutorial instruction (parents teaching their offspring how to make a fire and to hunt and adolescents instructing younger siblings about edible berries and roots) was probably the first pedagogy among primitive societies" (1987, p. 64). Wagner, on the other hand, traces the historical origins of peer tutoring in Western civilization back to Greece in the first century A.D. and through Rome, Germany, other European locales, and finally America (1990). Topping's history dates the formalized use of peer tutoring back to the 1700s (1988, pp. 12-18). Other academics trace peer tutoring back to the "Monitorial System" of the early nineteenth century (Bland and Harris 1989, p. 142).

Definitions

Probably the most succinct definition of peer tutoring comes from Damon and Phelps: "Peer tutoring is an approach in which one child instructs another child in material on which the first is an expert and the second is a novice" (1989a, p. 11). However, multiple definitions of peer tutoring exist, and they are not all consistent. For example, not *all* peer tutors are "experts." They are sometimes randomly assigned, same-age classmates (Greenwood, Delquardi, and Hall 1989; Palincsar and Brown 1986; Dinwiddie 1986) or same-aged low achievers (Pigott 1986). To make matters more confusing, the term "peer tutoring" often subsumes both cross-age and same-age tutoring. As Gaustad explains:

> Peer tutoring occurs when tutor and tutee are the same age. In cross-age tutoring, the tutor is older than the tutee. However, sometimes the term peer tutoring is used to include both types. (1993, p. 1)

Finally, some researchers imply that there is no such thing as a true "peer" tutor. As Damon and Phelps put it:

> . . . peer tutoring is often called "cross-age" tutoring, because the tutor is usually two or more years older than the tutee. In a strict sense, the phrase "peer tutoring" is something of an oxymoron. (1989b, p. 137)*

* For those who wish to pursue the differences between "peer" and "cross-age" tutoring further, Damon and Phelps' concepts of "degrees of equality" and "mutuality of interaction" may be helpful (1988).

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As if the overlap between peer and cross-age tutoring was not confusing enough, peer and cross-age tutoring also go by the names of "peer teaching," "peer education," "partner learning," "peer learning," "child-teach-child," and "learning through teaching" (Britz, Dixon, and McLaughlin 1989, p. 17); and there has been at least one instance in which cooperative learning has been referred to as peer-tutoring **(Wagner 1982, p. 225). Furthermore, peer tutoring is a type of "peer resource programming," and shares attributes with youth service, youth involvement, peer helping (or counseling), peer mediation, peer leadership, and cooperative learning. Peer tutoring has also been called one approach to "peer cooperation," along with cooperative learning and peer collaboration. "Peer collaboration" differs from peer tutoring in that children begin at roughly the same levels of competence when they collaborate to "solve tasks that neither could do previously" (Damon and Phelps 1989b, p. 142). Finally, "Mutual Instruction" or MI has been proposed as a more descriptive term than peer and cross-age tutoring (and counseling) (Swengel 1991, p. 704).

Why Use Peer and Cross-Age Tutoring?

There are three commonly cited benefits of peer and cross-age tutoring: the learning of academic skills, the development of social behaviors and classroom discipline, and the enhancement of peer relations (Greenwood, Carta, and Hall 1988, p. 264). Researchers have also identified improvements in self-esteem and one of its components--internal locus of control. It is important to note that all such benefits accrue to both tutor and tutee.

Some writers also cite broader benefits. Hedin, for example, cites "a more cooperative, pleasant classroom atmosphere" and "[recruiting] promising future teachers into the profession" (1987, p. 44). Still other potential benefits are better-adjusted students with skills transferable to parenting when they mature (Strayhorn, Strain, and Walker 1993). The focus of this report is direct benefits for tutors and tutees, but it also touches briefly on some indirect effects of interest to parents, teachers, and administrators.

The Research Base

The research literature on the subjects of peer and cross-age tutoring is extensive. One 1987 review indicated that more than 100 reports by teachers and researchers had been collected by the ERIC system alone (Hedin 1987), and a 1982 review found more than 500 titles by searching three different databases (Cohen, and Kulik 1981; Cohen, Kulik, and Kulik 1982). This document is by no means an exhaustive synthesis of the literature on peer and cross-age tutoring. It draws primarily on research that has been published during the last ten years and upon research sources that are relatively easy to identify and retrieve. It is chiefly concerned with research that establishes a connection between peer or cross-age tutoring and student outcomes, and focuses mainly on students in grades K-12.

This report references 82 documents. Each is cited and annotated in one of two sections--the Key References and the General References. The 32 Key References are research reviews, controlled experimental studies, or documents that are in some other way central to the present discussion. Of the eight research reviews, four deal with both peer and cross-age tutoring, three deal with peer tutoring alone, and one deals only with cross-age tutoring. Five of the reviews focus only on learning disabled, at-risk, or special education students. The General References section cites pieces that are less central to a review of effectiveness, are smaller in scope, or address issues in less depth than key documents do. In both sets of references, there are peer as well as cross-age studies; elementary, middle, high school and college studies; and studies of both "regular" and "special needs" students.

Research Findings

The peer and cross-age tutoring research conducted prior to the past decade is well represented by Cohen, Kulik, and Kulik's 1982 meta-analysis. Using strict methodological criteria, these researchers selected 52 well-designed studies describing program effects on

** See Kalkowski (1992) for more information on cooperative learning.

test scores, chiefly in reading and math. The results showed a moderately beneficial effect on the tutee achievement and a smaller but significant effect on their attitudes toward subject matter. Looking at the effects on tutors, the researchers found a small but significant effect for academic outcomes and for self-concept and a slightly larger effect for attitudes toward subject matter. Math achievement effects were stronger than reading effects for both tutors and tutees. Tutees' achievement improved more in more structured programs of shorter duration and when lower-level skills were taught and tested on locally developed examinations.

Most reports of tutoring's effectiveness published since the Cohen, et al. meta-analysis are based on studies of particular subjects or particular student populations. Thus, effectiveness is discussed here in the context of such categories.

MATHEMATICS

Both tutors and tutees have been shown to benefit academically from peer and cross-age tutoring in elementary mathematics (Britz, Dixon, and McLaughlin 1989; Damon and Phelps 1989a; Pigott, Fantuzzo, and Clement 1986). Math skills addressed in this research included ratio, proportion, and perspective taking, among others. Effects on affective outcomes in mathematics research were less conclusive, although there is evidence that peer tutoring can increase the formation of friendship bonds between partners. Many of the students in this research were low achievers, mildly handicapped, or socially disadvantaged.

LANGUAGE ARTS

Researchers have also noted significant beneficial effects on the language arts achievement of tutors (Rekrut 1992) and especially tutees (Palincsar and Brown 1986; Wheldall and Mettem 1985; Wheldall and Colmar 1990; Giesecke, et al. 1993; and Barbetta, et al. 1991). Language arts areas examined include story grammar, comprehension, identification of sight words, acqusition of vocabulary, and general reading skills. Most of this research involved elementary students (some were middle-schoolers), and positive results were found for both short- and long-term tutoring.

OTHER SUBJECTS

Research studies in the areas of peer and cross-age tutoring in science, social studies, health, and art are too few to permit firm conclusions about the achievement effects of these practices--indeed, some of this research did not address achievement outcomes. However, some positive achievement outcomes were noted (Rosenthal 1994; Bland and Harris 1989; Maheady, Sacca, and Harper 1988; Thurston 1994; and Anliker, et al. 1993).

AFFECTIVE OUTCOMES

Studies whose main focus was the affective outcomes produced by peer and cross-age tutoring have generally revealed positive results. These include improved attitudes of younger students toward older ones, increased "internality" of locus of control, and improved school attendance (Raschke, et al. 1988; Dohrn 1994; Imich 1990; and Miller, et al. 1993).

Studies pertaining to high-needs student populations are presented in the next section of this report.

High-Needs Students

AS TUTORS

Research on low-achieving and other high-needs students as tutors has increased in the last decade. Both wide-ranging reviews and individual studies show impressive gains for low-achieving, limited-English-speaking, learning disabled, behaviorally disordered and other at-risk student populations in both the academic and affective realms and at all age/grade levels. Areas showing significant benefits for tutors engaged in peer or cross-age tutoring include:

- Academic achievement in various subject areas, particularly reading and mathematics (Byrd 1990; Cardenas, et al. 1991; Maheady, et al. 1988, 1991; McLaughlin and Vacha 1992)
- Locus of control (Lazerson, et al. 1988)
- Self-esteem (Byrd 1990; Cardenas, et al. 1991)
- Social skills (Mathur and Rutherford 1991)

- Attitude toward school (Cardenas, et al. 1991)
- Dropout rate, truancy, tardiness (Cardenas, et al. 1991; Lazerson, et al. 1988).

AS TUTEES

A variety of studies have shown that students with disabilities benefit from being tutored. One broad review of studies of both regular and special education students and across a variety of subject areas, concluded that cross-age and same-age peer-mediated strategies were as effective or more effective than the traditional teacher-mediated practices to which they were compared (Greenwood, Carta, and Kamps 1990). Studies addressing specific categories of disability have also found academic and affective benefits, specifically improvements in mathematics, social skills, and time-on-task. These are identified below:

- Learning disabilities (Trapani and Gettinger 1989)
- Severe disabilities (Staub and Hunt 1993)
- Mental handicap (Vacc and Cannon 1991; Maheady, Sacca, and Harper 1988)
- Language delay (Goldstein and Wickstrom 1986)
- Autism (Walker 1985)
- Attention deficit hyperactivity disorder (DuPaul and Henningson 1993)
- Special education (Fowler 1986).

Cost

In a comparison of the cost-effectiveness of computer aided instruction (CAI), peer tutoring, reducing class size and increasing the length of the school day, peer tutoring was found to be more cost-effective than CAI (Levin, Glass, and Meister 1987, pp. 50-72). Both peer tutoring and CAI were shown to be more cost-effective than reducing class size or increasing the length of the school day. However, Greenwood, Carta, and Kamps have called attention to high start-up costs, including planning time, teacher training, consultation, peer-group or peer-tutor training, and monitoring to insure quality control. Even so, they say peer-tutoring operating costs may be lower than those of other programs (1990, p. 197).

Why Does Peer Tutoring Work?

One reason peer tutoring works may be that tutors and tutees speak a more similar language than do teachers and students (Hedin 1987; Cazden 1986). As Damon and Phelps put it,

> Unlike adult-child instruction, [in] peer tutoring the expert party is not very far removed from the novice party in authority or knowledge; nor has the expert party any special claims to instructional competence. Such differences affect the nature of discourse between tutor and tutee, because they place the tutee in a less passive role than does the adult/child instructional relation. Being closer in knowledge and status, the tutee in a peer relation feels freer to express opinions, ask questions, and risk untested solutions. The interaction between instructor and pupil is more balanced and more lively. This is why conversations between peer tutors and their tutees are high in mutuality even though the relationship is not exactly equal in status. (1989a, p. 138)

Peer tutors may simply be "good teachers." Teaching behaviors that were found to be positively related to response rates and academic gains in the research include on-task behavior, prompting and guiding, praise and encouragement, adjusting to the child's needs, managing behavior problems, allowing autonomous performance, bonding, cooperation, "go-faster" prompts, and "help" (Gorrell and Keel 1986; Kohler 1986).

Six conditions have been identified which may be needed for effectively transmitting knowledge through peer tutoring: (1) The tutor must provide relevant help which is (2) appropriately elaborated, (3) timely, and (4) understandable to the target student; (5) the tutor must provide an opportunity for the tutee to

use the new information; and (6) the tutee must take advantage of that opportunity (Webb 1989, p. 24).

A more detailed analysis of the theoretical issues underlying peer tutoring has been done by Foot, Shute, Morgan, and Barron (1990, pp. 65-92). For more background theory on the way children think and learn, see Wood (1988) and Wellman (1990); and for a more general theoretical treatment of peer interaction in cooperative work, see Hertz, Lazorowitz, and Miller (1992).

Obstacles To Use

Many writers lament the fact that peer tutoring is not used more often. As one teacher/author put it, "However ancient peer tutoring might be, many schools bypassed it when searching for effective ways to meet academic goals" (Martino 1994, p. 55). A retired teacher and professor, who is quite passionate about the need for such expansion, has said that "what has been fundamentally wrong with formal schooling for thousands of years is [the basic instructional unit of teacher-and-class]" and peer tutoring (or, as he says, "mutual instruction") is the solution (Swengel 1991, p. 704).

Professor Diane Hedin calls the fact that peer tutoring is not more widely used "a mystery" and offers suggestions in the hopes of expanding its use (1987, p. 42). Reissman calls the potential of peer tutoring an "unutilized resource" of minimal cost and high effectiveness (1993, p. 1). Finally, alcohol-and-drug-abuse prevention specialist Bonnie Benard strongly advocates a "peer resource model of education" based on seven ways in which research has indicated that peer relationships contribute to children's social and cognitive development. In her words, "It seems imperative we encourage and provide youth the opportunities to relate to each other and work together in a cooperative and/or collaborative way from early childhood on" (1990, p. 5).

Why, then, are peer and cross-age tutoring not in widespread use? One reason may be that, in spite of the many positive reviews and studies discussed above, prominent researchers considered the evidence on tutoring to be insufficient as recently as 1988. Greenwood, Carta, and Hall indicated five limitations and/or areas in need of future research at that time: (1) Strategies utilizing students with disabilities as tutors were insufficiently developed and validated; (2) peer tutoring procedures other than "specific cooperative learning strategies, cross-age tutoring, the tutor 'huddle' and classwide peer tutoring" were insufficiently validated; (3) the fidelity of peer-tutoring interventions had not yet been examined carefully enough; (4) few peer-tutoring procedures had been compared to alternative teacher- or materials-mediated procedures; and (5) there were "no commercially available peer-mediated curricula." As shown in the preceding section on research support for peer and cross-age tutoring, many of these concerns have since been laid to rest.

Another reason peer tutoring is still not widely used may be that, as Damon and Phelps put it, "Virtually all schooling, in this country and elsewhere, is structured around the traditional belief that knowledge is best transmitted from adult to child in linear fashion" (1989b, p. 136). All of the following have also been cited as obstacles: tradition, teacher resistance, possible disadvantages accruing to the tutor, possible tutor impatience, implications of tutor selection, parent cautiousness, implications for school organization, variable suitability of different subjects for peer tutoring, and possible lack of expertise on tutors' parts.

Others have speculated that peer tutoring may not be more widely used partly because of "the demands placed on teacher time" (Giesecke, Cartledge, and Gardner 1993, p. 34). These authors note that teachers may lack the skill to train their students properly to be tutors, they may be concerned about possible disruptive behavior in tutoring pairs, and they may question the quality of instruction offered by students, particularly high-needs students (p. 34). Foot has also indicated that teachers tend to be concerned about the time and effort needed to train tutors (1995).

Addressing Obstacles

The above concerns need to be addressed. Some questions reticent teachers and parents are likely to ask and answers to those questions, in the context of literacy projects, have been provided by Brice, Heath, and Mangiola (1991). They are paraphrased below:

Do tutors get something out of tutoring that they don't get from "traditional" instruction? Students need both. Research on collaborative learning shows that school achievement, creation of positive race relations, and socialization are higher in cooperative (or peer) settings. "Both mainstream and minority students show far greater increases in academic achievement when they participate in collaborative learning projects than when they remain in traditional teacher-focused classrooms" (pp. 54-55).

Since schools already demand so much of teachers, why burden them with another responsibility? Teachers today are faced with extensive time and energy demands, but cross-grade tutoring projects need teachers' involvement. By acting as literate models, teachers can model behaviors that can be used by students at home, for example, in helping siblings with homework. "The promise that such forms of learning have for dealing with important and pressing issues in the education of minority students should not--and, indeed, cannot--be ignored for [when teachers integrate learning outside and inside the school,] minority students move to academic competence" (p. 55).

How is literacy development through cross-grade tutoring documented? Although it is more difficult to assess cross-grade tutoring outcomes than more traditional teacher-centered instruction outcomes, "[m]any agree that the traditional ways of assessing students' learning--ascertaining whether students can get the 'right answers' to close-ended questions--do not adequately account for students' language competence" (p. 56). Teachers can observe and interact with their students during tutoring and writing sessions and profile changes in reading, talking, writing, and taking responsibility for learning. Students themselves can also assess and describe their own growth.

Is it fair to tutees to use nonexpert English speakers as tutors? Yes. The older students must be trained to act as competent tutors, no matter what their reading/writing level "through modeling, watching videotapes, and discussing the activity and its meaning with teachers and other tutors . . . tutors must understand that they have a responsibility for their tutees' learning as well as their own." Research has shown that medium and low achievers benefit more from collaborative learning than high achievers do, while high achievers perform equally well in both learning environments. "[I]f tutors are educated to see themselves as responsible and competent models for their tutees, the younger students always benefit" (p. 54).

Implementing Peer and Cross-Age Tutoring

Detailed discussion of implementation is outside the scope of this report. However, a review of the research reveals many readings that provide tips on how to implement peer and cross-age tutoring. Gaustad summarizes key elements that schools and districts should consider during planning and implementation of a peer tutoring program (1992, pp. 14-21). Jenkins and Jenkins describe in detail the components of successful peer tutoring programs, how to start a program, how to recruit and schedule, etc. (1987, pp. 66-67). Systematic tutoring procedures are described in a research review by Greenwood, Carta, and Hall (1988) and articles by Damon and Phelps (1989a, pp. 153-155) and Berliner and Casanova (1988). Another source of tips is The Peer Tutoring Handbook (Topping 1988).

Several authors have provided descriptions of tutoring systems that have been successful. One is Reciprocal Tutoring, a program used with high-needs students (Gaustad 1993, 1994). Reciprocal Tutoring programs "(1) give all students the opportunity to be tutors and thereby learn through teaching, and (2) have all tutors experience the tutee role as part of a tutoring apprenticeship" (p. 58), as well as including teacher support groups.

Other descriptions include the following. Martino (1994) describes prerequisites for a successful peer tutoring program based on a high school program that has been in operation since 1991. Rosenthal (1994) describes a cross-age science tutoring program. Brice, Heath, and Magniola (1991) describe cross-age, inter-active tutoring programs for non-native, elementary English speakers in California and elementary students in Texas, stressing reading and writing (pp. 20-29). Their appendix discusses how to implement cross-grade tutoring projects (pp. 52-53). Walker (1989) describes two sites in the South Carolina

Cross-Age Tutoring Project that "offer hope of becoming institutionalized."

Conclusion

Despite the obstacles noted above, research provides extensive evidence supporting the use of peer and cross-age tutoring. Achievement improves, and so do a host of social and affective outcomes. Perhaps Damon and Phelps said it best:

> Despite popular suspicions about the dangers that "peer pressure" poses for youth, scientific studies have left little doubt that peer relations can greatly benefit children's social and intellectual development. The case for children's peer relations has been made repeatedly and conclusively in developmental theory and research . . . Repeated studies have shown that peer interaction is conducive, perhaps even essential, to a host of important early achievements: children's understanding of fairness, their self-esteem, their proclivities toward sharing and kindness, their mastery of symbolic expression, their acquisition of role-taking and communication skills, and their development of creative and critical thinking. (1989a, p. 135)

Key References

Britz, M. W.; Dixon, J.; and McLaughlin, T. F. "The Effects of Peer Tutoring on Mathematics Performance: A Recent Review." *B. C. Journal of Special Education* 13/1 (1989): 17-33.

Reviews 1980-1989 study findings concerning the effects of peer tutoring on the mathematics performance of low achieving, mildly handicapped, or socially disadvantaged children. Concludes that peer tutoring usually resulted in significant cognitive gains for both the tutor and the tutee, while affective gains were not as conclusive. Both peer and cross-age tutoring had some benefit for the tutee and frequently the tutor.

Byrd, D. E. "Peer Tutoring With the Learning Disabled: A Critical Review." *Journal of Educational Research* 84/2 (1990): 115-118.

Assesses three review articles, six essays, and nine empirical studies about peer tutoring relating to special education and LD students, most of which pertain to Greenwood, et al.'s Classwide Peer Tutoring technique. Finds support for tutoring in each study, including support for integration of LD students into the regular classroom and beneficial effects on self-esteem, achievement and classroom management.

Cardenas, J. A.; Harris, R.; del Refugio Robledo, M.; and Supik, J. D. *Valued Youth Program Dropout Prevention Strategies for At-Risk Students.* Paper presented at the annual meeting of the American Education Research Association, Chicago, IL, April 1991.

Describes the Coca-Cola Valued Youth Program, in which limited-English-proficient, middle school children at risk of dropping out became paid cross-age tutors of elementary students. Presents findings that tutors were more likely than controls to stay in school and to have improved reading grades, increased self-esteem, and improved attitudes toward school.

Cohen, P. A., and Kulik, J. A. "Synthesis of Research on the Effects of Tutoring." *Educational Leadership* 39/3 (1981): 226-227.

Briefly describes a meta-analysis of 65 objective, comparative studies of tutoring located through computer searches. Effects on both tutors and tutees were positive in the areas of learning, attitude toward subject matter, and self-concept, although self-concept outcomes were small, especially for tutees. (See below.)

Cohen, P. A.; Kulik, J. A.; and Kulik, C. C. "Educational Outcomes of Tutoring: A Meta-Analysis of Findings." *American Educational Research Journal* 19/2 (1982): 237-248.

Describes meta-analysis of 65 studies of tutoring winnowed down from 500 titles found through computer searching. To be included, studies had to (1) take place in actual elementary or secondary classrooms, (2) report on quantitative outcomes of tutored and nontutored control groups,

and (3) be free of methodological flaws. Fifty-two of the 65 studies described program effects on examination scores. Thirty of these concerned reading, 18 concerned math, and four concerned other subject matter. The meta-analysis showed that the average tutee scored at the 66th percentile of untutored (control-group) students (in other words, the effect size or ES was .4). A smaller but significant effect (ES = .29) occurred for tutees' attitudes toward subject matter (measured in eight studies). A very small and nonsignificant effect (ES = .09) occurred for tutees' self-concepts (measured in nine studies). The effects on tutors were measured in 38 of the 65 studies. The average ES for academic outcomes was .33, for attitudes toward subjects it was .42, and for self-concept it was .18. Achievement effects were stronger for both tutors and tutees in math, and stronger for tutees in more structured programs of shorter duration, and when lower-level skills were taught and tested on locally developed examinations.

Damon, W., and Phelps, E. *Three Approaches of Peer Learning and Their Educational Uses.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April 1988.

Indicates three approaches to peer learning: peer tutoring, cooperative peer learning, and peer collaboration, and the degrees of equality and mutuality of interaction of each. Peer tutoring is low on equality, while peer collaboration is high, and cooperative learning is usually high. Peer tutoring and cooperative learning are variable on mutuality of interaction, while peer collaboration is high.

Damon, W., and Phelps, E. "Strategic Uses of Peer Learning in Children's Education." In *Peer Relationships in Child Development*, edited by T. J. Berndt and G. W. Ladd. New York: John Wiley and Sons, 1989b, 135-157.

Describes in detail the differences among peer tutoring, cooperative learning, and peer collaboration. Reports results of a two-year longitudinal study of 164 fourth and fifth graders. Children in experimental peer-collaboration pairs performed significantly better on ratio, proportion, and perspective-taking tasks on immediate and delayed posttests. Offers a detailed vision of the ideal educational atmosphere --a mix of peer and adult instructional techniques.

Foot, H. C. Personal Communication, January 24, 1995: "If a teacher has *any* concern, it's usually more associated with the time and effort necessary for adequate training." (See: Foot, H. C. and Kleinberg. "Training Children as Peer Tutors." *Topic* 10(1993): 1-6.

Foot, H. C.; Morgan, M. J.; and Shute, R. H. "Children's Helping Relationships: An Overview." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 3-17.

Differentiates among three main approaches to "peer cooperation"--peer tutoring, peer collaboration, and cooperative learning--and defines each.

Foot, H. C.; Shute, R. H.; Morgan, M. J.; and Barron, A. "Theoretical Issues in Peer Tutoring." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 65-92.

Discusses children's interaction with other children vs. adults and how it leads to cognitive development, based in part on the theories of Piaget and Vygotsky. Reviews peer tutoring research with particular emphasis on (1) the child's perception of tutoring roles, (2) children's teaching strategies, and (3) tutors' sensitivity to the needs of learners.

Gorrell, J., and Keel, L. "A Field Study of Helping Relationships in a Cross-age Tutoring Program." *Elementary School Guidance and Counseling* 20/4 (1986): 268-276.

Presents eight categories of significant behaviors found in a field study of 24 pairs of eighth grade tutors and first grade tutees in a university laboratory school: on-task behavior, prompting and guiding,

praise and encouragement, adjusting to the child's needs, managing behavior problems, allowing autonomous performance, bonding and cooperation.

Greenwood, C. R. "Classwide Peer Tutoring: Longitudinal Effects on the Reading, Language, and Mathematics Achievement of At-Risk Students." *Reading, Writing and Learning Disabilities* 7/2 (1991): 105-123.

Describes how Classwide Peer Tutoring (CWPT) puts effective instructional variables into practice and how it improves academic achievement. The effective instructional variables CWPT utilizes are: engaged time, time management success rate or successful completion of tasks, academic learning time, monitoring, structuring and questioning. Reports findings that CWPT, when systematically applied to oral reading, spelling and arithmetic facts, increased students' performance on standardized measures of reading, language and mathematics. Discusses two CWPT drawbacks: first, that most of the evidence of its effectiveness is in the realm of acquisition of rote skills and second, that the content for tutoring sessions must be developed or adapted by the teacher.

Greenwood, C. R.; Carta, J. J.; and Hall, V. "The Use of Peer Tutoring Strategies in Classroom Management and Educational Instruction." *School Psychology Review* 17/2 (1988): 258-275.

Presents five limitations of the small number of effective and research-validated classroom intervention procedures for use with particular classroom situations and problems. Posits peer-oriented procedures for instruction and behavior management that have emerged in the last ten years and surmount these limitations. Discusses the differences between peer-influence and peer-mediated strategies and the benefits of both. Lists four potential problems/ concerns related to the use of peer procedures. Lists the purposes and goals of peer tutoring strategies. Describes systematic tutoring procedures and recent advances. Indicates limitations and areas in need of future research and implications.

Greenwood, C. R.; Carta, J. J.; and Kamps, D. "Teacher-Mediated Versus Peer-Mediated Instruction: A Review of Educational Advantages and Disadvantages." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 177-205.

Reviews a variety of studies and concludes that peer-mediated strategies are as effective as, or more effective than, the traditional teacher-mediated practices to which they were compared, with regular and special education students and across a variety of subject areas. Cautions that peer-mediated approaches entail additional costs, responsibilities, and ethical concerns, which, however, the authors believe to be well worth it compared with the costs of many alternatives that are "teacher- or computer-mediated."

Greenwood, C. R.; Delquardi, J. C.; and Hall, R. V. "Longitudinal Effects of Classwide Peer Tutoring." *Journal of Educational Psychology* 81/3 (1989): 371-383.

Describes a four-year longitudinal study of a Classwide Peer Tutoring (CWPT) program in which pairs of low-SES children are assigned to one of two competing teams, and tutor and tutee roles are reversed in every session. Tutees win points for their teams, which in turn win social rewards. These low-SES, elementary school, Chapter 1 students scored from .5 to 1.4 grade equivalents higher than the low-SES students who were not in the CWPT program on standardized reading, mathematics, and language arts tests. These differences were statistically significant.

Hedin, D. "Students as Teachers: A Tool for Improving School." *Social Policy* 17/3 (1987): 42-47.

Reviews peer and cross-age tutoring in terms of (1) current use; (2) expected benefits to tutors, tutees, teachers and society; (3) research on academic and affective outcomes for tutors and tutees; and (4) tips for expanding the use of peer tutoring.

Imich, A. J. "Pupil Tutoring: The Development of Internality and Improved School

Attendance." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 93-115.

Discusses results showing that peer tutoring may lead to a more internal vs. external locus of control and to improved school attendance. Discusses possible theoretical reasons for these findings.

Levin, H. M.; Glass, G. V.; and Meister, G. R. "Cost-Effectiveness of Computer-Assisted Instruction." *Evaluation Review* 11/1 (1987): 50-72.

Presents findings of a comparison of the cost-effectiveness of CAI, peer tutoring, reducing class size and increasing the length of the school day. Peer tutoring is more cost-effective than CAI, and both are more cost-effective than reducing class size or increasing the length of the school day. Effect size (generated by achievement test standard deviation units) and cost were both taken into account.

Maheady, L.; Mallette, B.; Levin, H.; and Harper, G. F. "Accommodating Cultural, Linguistic and Academic Diversity." *Preventing School Failure* 36/1 (1991): 28-31.

Describes the Classwide Peer Tutoring (CWPT) approach of Delquardi, Greenwood, Whorton, Carta, and Hall (1986). Lists studies which have shown its effectiveness across different subject areas, age levels and instructional settings, all of which were conducted with at-risk students serving as tutors and tutees. Also describes the Classwide Student Tutoring Teams (CSTT) approach, a combination of CWPT and Slavin's Team-Games-Tournament approach. Cites studies showing that CSTT students' weekly math quiz scores increased by approximately 20 percentage points.

Maheady, L.; Sacca, M. K.; and Harper, G. F. "Classwide Peer Tutoring With Mildly Handicapped High School Students." *Exceptional Children* 55/1 (1988): 52-59.

Reports effects of Classwide Peer Tutoring (CWPT) on the academic performance of 14 mildly handicapped and 36 nondisabled students in three tenth grade social studies classes. Randomly assigned tutor-tutee pairs, belonging to one of two teams, quizzed each other verbally using study guides and took written weekly quizzes for points for their teams. Quiz scores changed from approximately 70 percent during baseline, for both handicapped and non-handicapped students, to approximately 90 percent for both groups, and far fewer failures overall in this ABAB experimental design.

Mathur, S. R., and Rutherford, R. B. "Peer Mediated Interventions Promoting Social Skills of Children and Youth With Behavioral Disorders." *Education and Treatment of Children* 14/3 (1991): 227-242.

Reviews 21 articles about peer-mediated interventions and their success in promoting social skills in children and youth with behavioral disorders, and finds that these approaches have immediate, positive treatment effects. that typologies of these treatments have been identified, and that there is a lack of evidence supporting generalization across settings and regarding maintenance of effects.

McLaughlin, T. F., and Vacha, E. F. "School Programs for At-Risk Children and Youth: A Review." *Education and Treatment of Children* 15/3 (1992): 255-267.

Reviews and evaluates literature regarding a variety of programs that assist at-risk students. Classwide tutoring (as well as other models) was found to be effective in "assisting the education of at-risk children and youth." One program involved using middle-school students to tutor elementary Chapter 1 students. Tutors who received weekly training gained .49 standard deviations in math on the Metropolitan Achievement Test over untrained tutors. Tutees gained .93 standard deviations.

Palincsar, A. S., and Brown, A. L. "Interactive Teaching to Promote Independent Learning From Text." *The Reading Teacher* 39/8 (1986): 771-777.

Describes "reciprocal teaching," in which adults and students take turns assuming the role of teacher using four comprehension-fostering and comprehension-monitor-

ing strategies: predicting, question generating, summarizing, and clarifying. Seventy-one percent of students in six remedial middle school teachers' classes achieved 70 percent accuracy on criterion measures for four out of five days, while 19 percent of control students did, when tutored by four of the best students in each class.

Rekrut, M. D. *Teaching to Learn: Cross-Age Tutoring to Enhance Strategy Acquisition.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April 1992.

Examines tutoring as a pedagogical tool to enhance tutor learning. High school students learned story grammar strategies and either did or did not teach these to fourth and fifth graders twice a week for six weeks. The group that tutored did significantly better on story grammar posttests.

Slavin, R. E.; Karweit. N. L.; and Wasik, B. A. *Preventing Early School Failure: What Works?* Report No. 26. Baltimore, MD: Center for Research on Effective Schooling for Disadvantaged Students, 1991.

Summarizes research on the impacts of alternative early intervention programs to prevent school failure, examines the magnitude of estimates of program effects, and discusses policy implications of using the alternative approaches. Nine types of early schooling programs were reviewed: substantial reduction in class size, provision of instructional aides in the early grades, preschool for four-year-olds, extended-day kindergarten, retention in kindergarten and first grade, provision of transitional first grade or developmental kindergarten, Writing to Read, one-to-one tutoring by teachers or paraprofessionals, and Success for All. Concludes that the most effective strategies preventing early school failure are programs that involve one-to-one tutoring in reading for first graders, especially in structured models that use well-trained certified teachers as tutors.

Slavin, R. E., and Madden, N. A. "What Works for Students at Risk: A Research Synthesis." *Educational Leadership* 46/5 (1989): 4-13.

Discusses results of reviewing research on "every imaginable approach designed to increase student reading and mathematics achievement in the early grades" (p. 5). Concludes that continuous-progress programs and cooperative-learning approaches are the most effective classroom change programs, and that remedial-tutoring and CAI programs are the most effective supplementary remedial programs.

Staub, D., and Hunt, P. "The Effects of Social Interaction Training on High School Peer Tutors of Schoolmates with Severe Disabilities." *Exceptional Children* 60/1 (1993): 41-57.

Demonstrates that volunteer, peer, high school tutors can increase their rate of social initiation toward and interaction with severely disabled peers, and thereby increase targeted social behaviors in those peers, after relevant training. Eight tutors (four trained and four controls) worked with four severely disabled students. Trained tutors had significantly higher rates of social interaction with tutees than did controls.

Swengel, E. M. "Cutting Education's Gordian Knot." *Phi Delta Kappan* 72/5 (1991): 704-710.

Proposes "Mutual Instruction" (MI) as a more descriptive term than peer and cross-age tutoring and counseling. Proposes that the basic instructional unit of teacher-and-class has been the fundamental problem with formal schooling for thousands of years and proposes MI as the solution. Says that MI provides, in an integrated way, four elements identified by Walberg and Bloom (1984) as contributing most to mastery learning: reinforcement, acceleration, reading training, and cues and feedback. Describes how to restructure a school for MI.

Trapani, C., and Gettinger, M. "Effects of Social Skills Training and Cross-Age Tutoring on Academic Achievement and

Social Behaviors of Boys with Learning Disabilities." *Journal of Research and Development in Education* 22/4 (1989): 1-9.

Compares Test of Written Spelling (TWS), Walker Problem Behavior Identification Checklist (WPBIC), and observed social communication skills of three groups of six or seven boys each. One group received social skills training and tutoring, another received only social skills training, and the last served as a comparison group. The group receiving both treatments performed better on the TWS and on the observed behaviors of greeting and answering questions, but not on the WPBIC or other observed behaviors.

Webb, N. M. "Peer Interaction and Learning in Small Groups." In *Peer Interaction, Problem-Solving and Cognition: Multidisciplinary Perspectives*, edited by N. M. Webb. New York: Pergamon Press, 1989, 21-29.

Discusses two kinds of peer interaction in small groups--(1) level of elaboration of help given and received and (2) appropriateness of responses to requests for help--and their relationship to student achievement. Presents a model of peer interaction and learning in small groups. Lists the six conditions required for help received by peers to be effective. Lists factors which have been shown to influence student interactive behavior (student ability, gender, personality, and group composition by ability and gender). Hypothesizes that student interactive behavior is influenced by the group's perception about the locus of control of the student needing help, the size of the group, the reward structure, and the task structure.

Wheldall, K., and Colmar, S. "Peer Tutoring for Low-Progress Readers Using 'Pause, Prompt and Praise'." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990. 117-134.

Argues for using peers for reading tutoring because (1) parents may not always be available or appropriate tutors; (2) peer tutors are plentiful, available for training and can be readily monitored and organized; (3) low-progress readers respond readily to peer tutors; and (4) tutoring is beneficial to tutors and increases their caring for others. Describes original study and four replication studies of "Pause, Prompt and Praise" method, and concludes that peers can learn to use the method's procedures quickly and easily, tutors can gain reading skill from using it, and low-progress readers gain a great deal by being tutored with it. Average or better readers, meanwhile, do just as well if they simply have someone hear them read regularly. Emphasizes the importance of teacher training in the method.

Wheldall, K. and Mettem, P. "Behavioral Peer Tutoring: Training 16-year-old Tutors to Employ the 'Pause, Prompt, and Praise' Method With 12-year-old Remedial Readers." *Educational Psychology* 5/1 (1985): 27-44.

Describes the "Pause, Prompt, and Praise" method in which the tutor delays attention to a reader's error for at least five seconds or until the end of a sentence, uses prompts rather than straightforward corrections, and praises the tutee. Describes results of a study of this method. After just 60 minutes of tutor training, tutors used the method well and tutees had finished 36 levels of a graded reading program, while tutees working with untrained tutors had finished just 29, and students reading silently had finished 24. In addition, tutees who were tutored using "Pause, Prompt and Praise" gained over six months in reading accuracy in two months compared with a one-month gain for the silent readers. Two months after the study ended, these students still showed substantial, though not statistically significant, gains on a comprehension test.

General References

Anliker, J. A.; Drake, L. T.; Pacholski, J.; and Little, W. "Impacts of a Multi-Layered Nutritional Education Program: Teenagers Teaching Children." *Journal of Nutrition Education* 25/3 (1993): 140-143.

Describes an experimental study in which two groups of teens, ages 14-17, tutored children in nutrition for a summer. There

were significantly greater gains for the 30 tutored children than for the 19 comparison children.

Barbetta, P. M.; Miller, A. D.; Peters, M. T.; Heron, T. E.; and Cochran, L. L. "Tugmate: A Cross-Age Tutoring Program to Teach Sight Vocabulary." *Education and Treatment of Young Children* 14/1 (1991): 19-37.

Conveys the results of a six-week program of tutoring for six elementary tutees by six high school tutors. Tutees acquired and maintained a substantial number of new sight vocabulary words after tutoring and maintained words up to four months following instruction.

Bartz, D., and Miller, L. K. *12 Teaching Methods to Enhance Student Learning.* (Report No. ISBN-0-8106-1093-0). Washington, DC: National Education Association, 1991 (ED 340 686).

Provides brief research overviews of 12 teaching methods that have a sound theoretical basis, have demonstrated a positive impact on student learning, and have a substantial research base. One of these is peer tutoring. Its cost effectiveness, key factors in effectiveness of tutors, and several advantages of peer tutoring are discussed.

Benard, B. *The Case for Peers.* Portland, OR: Northwest Regional Educational Laboratory, 1990.

Advocates a "peer resource model of education," i.e., programs such as youth service, cooperative learning, peer tutoring, cross-age tutoring, peer helping, peer mediation, peer leadership, and youth involvement. Briefly reviews seven ways in which research indicates that peer relationships contribute to a child's social and cognitive development. Discusses the importance of social support to positive outcomes and details the many research-based positive outcomes of peer resource programs.

Berliner, D., and Casanova, U. "Peer Tutoring: A New Look at a Popular Practice." *Instructor* 97/5 (1988): 14-15.

Berliner reviews a study by Levin, Glass, and Meister (1987) which showed that tutoring was more cost-effective than reduced class size, increased instructional time, and CAI. Casanova discusses five steps needed to implement a successful tutoring program: class preparation, selection of tutors, preparation of tutors, monitoring by the teacher, and continuous assessment of student progress.

Bland, M., and Harris, G. "Peer Tutoring." *School Science Review* 71/255 (1989): 142-144.

Traces peer tutoring back to the "Monitorial System" of the early nineteenth century, which consisted of a "wave-like delivery of the subject matter through monitors instructed by a single teacher" (p. 142). Describes lessons conducted by the science department at a community school with its third-year chemistry classes working in pairs of more- and less-able students (as defined by departmental profiles). Concludes that these lessons were "of a superior quality" (p. 144) in terms of students' learning, motivation and enjoyment. Indicates availability of videotapes of trial lessons.

Cazden, C. B. "Classroom Discourse." In *Handbook of Research on Teaching*, 3d edition, edited by M. C. Wittrock. New York: MacMillan, 1986, 450-451.

Discusses differences between the communication of teachers teaching students and tutors teaching students.

Damon, W., and Phelps, E. "Critical Distinctions Among Three Approaches." In *Peer Interaction, Problem-Solving, and Cognition: Multidisciplinary Perspectives*, edited by N. M. Webb. New York: Pergamon Press, 1989a, 9-19.

Discusses the relative levels of equality (in which both parties in an engagement take direction from one another rather than one party unilaterally directing the other) and mutuality of engagement (in which the discourse is extensive, intimate and "connected") in peer tutoring, cooperative learning, and peer collaboration. Concludes that peer collaboration has high

levels of both, while cooperative learning is high in equality but not mutuality, and peer tutoring has a low level of equality and a varied amount of mutuality. Contrasts peer approaches with "guided participation" and recommends peer discourse as a useful supplement to effective adult teaching.

Dinwiddie, G. *An Assessment of the Functional Relationship Between Classwide Peer Tutoring and Students' Academic Performance*. Doctoral dissertation submitted to the Department of Human Development and Family Life and the Faculty of the Graduate School of the University of Kansas, October 8, 1986.

Describes study results indicating that spelling, math and reading achievement of both average and low-ability inner city, second grade students was greater in a year-long Classwide Peer Tutoring condition in which students earned points for their teams. However, no comparison group was used. Better outcomes for tutees were related to quality and intensity of peer tutoring.

Dohrn, E., and Bryan, T. "Attribution Instruction." *Teaching Exceptional Children* 27/4 1994): 61-63.

Outlines a nine-step system for using peer or cross-age tutoring to teach the "acquisition of self-referent thoughts" (for a more internal locus of control) on the part of learning disabled students, which, according to other studies referenced by the authors, lead to greater academic achievement gains.

Doise, W. "The Development of Individual Competencies Through Social Interaction." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 43-64.

Presents a theoretical framework of the links between social interaction and the cognitive and social development mechanisms of coordination of interdependent actions, socio-cognitive conflict, and "social marking" (correspondence between social relations and cognitive [Piagetian] operations on properties of objects).

DuPaul, G. J, and Henningson, P. N. "Peer Tutoring Effects on the Classroom Performance of Children With Attention Deficit Hyperactivity Disorder." *School Psychology Review* 22/1 (1993): 134-143.

Describes a study in which Classwide Peer Tutoring caused one student with Attention Deficit Hyperactivity Disorder (ADHD) to show improved attention to instruction, a lower task-irrelevant activity level, and increased acquisition of mathematics skills after two baseline periods.

Fantuzzo, J. W.; Riggio, R. E.; Connely, S.; and Dimeff, L. A. "Effects of Reciprocal Peer Tutoring on Academic Achievement and Psychological Adjustment: A Component Analysis." *Journal of Educational Psychology* 81/2 (1989): 173-177.

Presents results of a study of the dyad and structure (prescribed format) components of the Reciprocal Peer Tutoring (RPT) strategy as experienced by 100 undergraduate college students. Both the dyad and structure components of RPT were determined to significantly impact comprehensive examination scores.

Fontana, D. "Where Do We Go From Here? A Personal View By An Educationalist." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 375-388.

Acknowledges peer tutoring benefits and discusses reasons why peer tutoring isn't more widely used, including inherited tradition and teacher resistance--which may be partly based on seeing peer tutoring as a substitute for properly organized teacher activity. Cautions against urgent advocacy of peer tutoring for reasons including possible disadvantages accruing to the tutor, possible tutor impatience, implications of tutor selection, parent cautiousness, implications for school organization, variable suitability of different subjects for peer tutoring, possible lack of expertise on tutors' parts, etc.

Fowler, S. A. "Peer Monitoring and Self-Monitoring: Alternatives to Traditional Teacher Management." *Exceptional Children* 52/6 (1986): 573-581.

Reports findings of a study in which ten children in a special kindergarten class learned to use peer- and self-monitoring to decrease disruption and nonparticipation during transition activities. Inappropriate behaviors among three target children decreased.

Fresko, B., and Chen, M. "Ethnic Similarity, Tutor Expertise, and Tutor Satisfaction in Cross-Age Tutoring." *American Educational Research Journal* 26/1 (1989): 122-140.

Reports the results of a survey study of the effects of tutor-tutee ethnic similarity, tutor expertise and perceived goal attainment on the satisfaction of 425 college student tutors of disadvantaged elementary children. The major factor directly influencing satisfaction was the extent to which tutors felt they had achieved project goals, not tutor-tutee ethnic similarity or tutor expertise factors.

Gartner, A., and Riessman, F. "Peer Tutoring: Toward a New Model." *ERIC Digest*. Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education, August 1993.

Cites studies of the effectiveness of tutoring on tutor gains as a rationale for the Reciprocal Tutoring approach. Describes this approach and says that support of administrators and school-based management teams is crucial.

Gartner, A., and Riessman, F. "Tutoring Helps Those Who Give, Those Who Receive." *Educational Leadership* 52/3 (1994): 58-60.

Describes a study funded by the Kellogg Foundation in which six New York high schools were test sites for Reciprocal Tutoring. Describes Reciprocal Tutoring, which may be either cross-age or within-grade (with roles of tutor and tutee alternated).

Gaustad, J. "Peer and Cross-Age Tutoring." *ERIC Digest* 79. Eugene, OR: ERIC Clearinghouse on Educational Management, March 1993.

Describes benefits of one-to-one tutoring, several peer and cross-age tutoring programs, what makes tutoring effective, problems that are commonly encountered, and the elements necessary for a successful program.

Gaustad, J. "Tutoring for At-Risk Students." *OSSC Bulletin* 36/3 (1992).

Explores the reasons for the effectiveness of tutoring, particularly for at-risk students; examines representative tutoring programs; and summarizes key elements that schools and districts should consider during planning and implementation of a peer tutoring program.

Giesecke, D.; Cartledge, G.; and Gardner, R. "Low-Achieving Students as Successful Cross-Age Tutors." *Preventing School Failure* 37/3 (1993): 34-43.

Further validates the positive effects of peer tutoring, particularly as they relate to low-achieving students as tutors. Four tutees correctly identified more sight words after a six-week tutoring program than they had before the program.

Goldstein, H., and Wickstrom, S. "Peer Intervention Effects on Communicative Interaction Among Handicapped and Nonhandicapped Pre-schoolers." *Journal of Applied Behavior Analysis* 19/2 (1986): 209-214.

Two preschool children "at or above age level" were assigned as "confederates" and taught strategies to facilitate interaction with three language-delayed peers. All three handicapped children exhibited higher interaction rates over the course of 75 weeks.

Heath, S. B., and Mangiola, L. *Children of Promise: Literate Activity in Linguistically and Culturally Diverse Classrooms*. NEA School Restructuring Series. Washington, DC: National Education Association, 1991.

Describes "literate activity" in linguistically and culturally diverse classrooms, and more specifically, describes cross-age, interactive tutoring programs for non-native, elementary English speakers in

California and elementary students in Texas. Appendix lists steps for implementing cross-grade tutoring projects in literacy. Provides list of several oft-raised questions about cross-grade tutoring and answers to them.

Hertz-Lazarowitz, R., and Miller, N. *Interaction in Cooperative Groups*. New York: Cambridge University Press, 1992.

Examines developmental foundations and social construction of knowledge and social skills, classroom factors influencing peer interactions, effects of task and reward structure on academic achievement, and factors influencing the promotion of positive intergroup relations. Provides recommendations for application of the research.

Jenkins, J. R., and Jenkins, L. M. "Making Peer Tutoring Work." *Educational Leadership* 44/6 (1987): 64-68.

Describes in detail the components of successful peer tutoring programs, how to start a program, how to recruit and schedule, etc.

Kalkowski, M. *How Cooperative Learning Theory was Transformed Into Practice in the Project for the Implementation of Cooperative Learning (PFICL): A Qualitative Case Study*. Doctoral dissertation submitted to the School of Education and the Committee on Graduate Studies of Stanford University, August 1992.

Describes a case study of a site implementing cooperative learning in which seven transformations of cooperative learning, as it is described in the research literature, were observed in practice. Chapter 2 (pp. 8-36) defines cooperative learning and summarizes cooperative learning theory and research.

Kohler, F. W. *Classwide Peer Tutoring: Examining Natural Contingencies of Peer Reinforcement*. Doctoral thesis submitted to the Department of Human Development and Family Life and the Faculty of the Graduate School of the University of Kansas, December 1986.

Describes three supportive behaviors exhibited by third grade tutors that were not taught to them as part of the Classwide Peer Tutoring procedure: "go faster prompts," "praise" and "help" (in which tutors correctly spell words misspelled by tutees). These behaviors increased academic response rates of three tutees and academic gains by one student whose weekly achievement was analyzed.

Kohler, F. W., and Strain, P. S. "Peer-Assisted Interventions: Early Promises, Notable Achievements, and Future Aspirations." *Clinical Psychology Review* 10/4 (1990): 441-452.

Lists four types of peer-assisted interventions reported within the educational and applied behavior analysis literature: peer management of nonacademic social behavior, peer academic tutoring, peer skill modeling, and group-oriented contingencies (e.g., cooperative learning). Concludes that the literature indicates "some evidence of effectiveness, but little documentation of procedural practicality" (p. 441).

Lazerson, D. B.; Foster, H. L.; Brown, S. I.; and Hummel, J. W. "The Effectiveness of Cross-Age Tutoring with Truant, Junior High School Students with Learning Disabilities." *Journal of Learning Disabilities* 21/4 (1988): 253-255.

Reports results of a study of 16 truant and tardy junior high school students with learning disabilities who were used as tutors for younger, learning disabled students. After six weeks of tutoring, they all made significant gains in locus of control and most showed decreased truancy and tardiness.

Martino, L. R. "Peer Tutoring Classes for Young Adolescents: A Cost-Effective Strategy." *Middle School Journal* 25/4 (1994): 55-58.

Describes a peer tutoring program begun at a high school three years prior to the article. Lists prerequisites of a successful tutoring program. Includes several program documents: teacher referral form, parent/student contract, and peer tutoring guide.

Miller, L.; Kohler, F. W.; Kohler, H. E.; Hoel, K.; and Strain, P. S. "Winning With Peer Tutoring: A Teacher's Guide." *Preventing School Failure* 37/3 (1993): 14-18.

Briefly reviews positive academic outcomes and social benefits of peer tutoring and describes a systematic process for teachers to use to plan, implement and maintain a peer tutoring intervention.

Pigott, H. E.; Fantuzzo, J. W.; and Clement, P. W. "The Effects of Reciprocal Peer Tutoring and Group Contingencies on the Academic Performance of Elementary School Children." *Journal of Applied Behavior Analysis* 19/1 (1986): 93-98.

Reports the results of study of 12 underachieving fifth graders who were selected based on low arithmetic performance to serve as reciprocal peer tutoring group trainers. In these groups of four, "peer tutoring operations" were equated with group roles. In addition, reward contingencies were in place. Thus the intervention is perhaps best called "cooperative learning" rather than peer tutoring. The intervention increased the students' arithmetic performance "to a level indistinguishable from their classmates" during treatment and 12 weeks later, and their "peer affiliation" with other group members increased.

Raschke, D.; Dedrick, C.; Strathe, M.; Yoder, M.; and Kirkland, G. "Cross-Age Tutorials and Attitudes of Kindergartners Toward Older Students." *Teacher Educator* 23/4 (1988): 10-18.

Presents results of a study in which 70 kindergarten students were assigned to either a cross-age tutoring program utilizing sixth grade tutors (for weekly, one-hour exchanges) or to a comparison group. Those in the tutoring program showed significantly more positive attitude growth toward older students than the nontutored group.

Riessman, F. "A Self-Help Reform Model." *Education Week* 13/11 (November 17, 1993): 1.

Suggests and briefly describes an "institutional self-help model" in which older students earn credit for tutoring younger ones. Bases this suggestion on the effectiveness and low-cost of tutoring.

Rosenthal, S. "Students as Teachers." *Thrust for Educational Leadership* 23/6 (1994): 36-38.

Describes a cross-age tutoring program in which at-risk high school students tutored fourth graders using the SERIES (Science Experiences and Resources for Informal Education Settings) curriculum.

Stirton, M. Personal Communication, January 23, 1995. "Teachers need to spend time training their student tutors and tutees if the program is to function effectively. This training can be integrated into the language arts portion of the curriculum so that it will enhance and give validity to the curriculum. In our program, the older children, tutors, write lesson plans and maintain a log. The younger children, tutees, write or draw what they did during their meetings with the tutors. During the meetings, the children read and discuss the literature and then write about it. There is nothing that they do that is extra and that does not apply to language arts or that could not be expanded to cover other areas of the curriculum."

Strayhorn, J. M., Jr.; Strain, P. S.; and Walker, H. M. "The Case for Interaction Skills Training in the Context of Tutoring as Preventative Mental Health Intervention in Schools." *Behavioral Disorders* 19/1 (1993): 11-26.

Hypothesizes that peer tutoring as a training ground for relationship and academic skills would create better-adjusted children who would grow into better-adjusted adults, based on studies showing that exposure to warm social contact, and particularly peer acceptance, suppresses symptoms of psychological problems, and vice versa.

Thorkildsen, T. A. "Justice in the Classroom: The Student's View." *Child Development* 60/2 (1989): 323-334.

Presents the results of interviews of students aged 6-29 concerning the relative fairness of five commonly used classroom

practices. Peer tutoring was judged as fairer than: fast workers working ahead (acceleration), fast workers sitting and waiting, fast workers using the computer for enrichment, and all students "moving on" although the slowest students never finish their work. Older students, however, saw peer tutoring as less fair than younger students, and acceleration and enrichment as more fair.

Thorkildsen, T. A. "Those Who Can, Tutor: High-Ability Students' Conceptions of Fair Ways to Organize Learning." *Journal of Educational Psychology* 85/1 (1993): 182-190.

Investigates high-ability and comparison students' views of the relative fairness of acceleration for faster learners, faster students waiting for slower students to catch up, faster learners setting the pace for instruction, enrichment for faster learners, and peer tutoring. Judged fairest was abler students tutoring the less able.

Thurston, J. K. "Art Partners: A New Focus on Peer Teaching." *School Arts* 94/1 (1994): 41-42.

Describes implementation of cross-age tutoring in which high school students tutor elementary students in art in 16 classes on a biweekly basis. Provides anecdotal evidence of the program's success.

Topping, K. *The Peer Tutoring Handbook: Promoting Cooperative Learning*. Cambridge, MA: Brookline Books, 1988.

Discusses the history of tutoring, how to organize and implement a program, effectiveness research, and how to evaluate a project.

Vacc, N. N., and Cannon S. J. "Cross-Age Tutoring in Mathematics: Sixth Graders Helping Students Who are Moderately Handicapped." *Education and Training in Mental Retardation* 26/1 (1991): 89-97.

Examines the effects of a six-week, cross-age tutoring program on four moderately mentally handicapped elementary students' mathematics learning. Tutees' mathematics skills increased during the program, but maintenance of or improvement in mathematics skills varied two years later. The sixth grade tutors' attitudes toward their mentally handicapped peers improved.

Wagner, L. "Social and Historical Perspectives on Peer Teaching and Education." In *Children Helping Children*, edited by H. C. Foot, M. J. Morgan, and R. H. Shute. New York: John Wiley and Sons, 1990, 21-42.

Traces the historical origins of peer tutoring in Western civilization back to Greece in the first century A.D. and through Rome, Germany, other European locales and finally America. Relates changes in peer teaching to prevalent social, economic and political influences.

Wagner, L. *Peer Teaching: Historical Perspectives*. Westport, CT: Greenwood Press, 1982.

The eight chapters of this book discuss the history of peer teaching in detail, each covering one of the following topics, respectively: peer teaching from Greek and Roman times to the close of the Renaissance, the seventeenth century use of peer teaching, peer teaching in the eighteenth century and educational transition to the nineteenth century, developments in nineteenth century England, peer teaching in Europe in the nineteenth century, development of peer teaching in North America in the nineteenth century, use of peer teaching in Latin America in the nineteenth century, and twentieth century developments in theory and practice of peer teaching in the United States.

Walker, D. *Peer Mediated Instruction Between Autistic Students: Tutor Training and Tutor Effectiveness*. Masters thesis submitted to the Department of Human Development and Family Life and the Faculty of the Graduate School of the University of Kansas, May 10, 1985.

Reports results of training an autistic student to peer tutor. The tutor learned seven tutoring steps. These skills generalized to other tasks. The tutee also exhibited learning of three "prevocational tasks."

Walker, W. "'I Love Helping These Students Out on Their Reading': The Cross-Age Tutoring Project." *Bread Loaf News* (1989): 6-11.

Describes two sites in the South Carolina Cross-Age Tutoring Project that "offer hope of becoming institutionalized": Tamassee-Salem High School and Branchville Elementary and High School.

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SCHOOL IMPROVEMENT RESEARCH SERIES
"Research You Can Use"

Snapshot #33

Engendering School Improvement Through Strong Instructional Leadership

Sale Elementary School and the Demonstration School Columbus, Mississippi

E. Gregory Woods

Research Findings

Effective schooling research identifies schooling practices and characteristics associated with measurable improvements in student achievement and attitudes and excellence in student behavior. One of these "effective schooling practices" is the element of strong instructional leadership.

What are the research findings regarding district, school and classroom practices for improving student achievement via instructional leadership? Consistency in the findings across a great many studies using a variety of methodologies is strong. *Effective Schooling Practices: A Research Synthesis / 1990 Update,* published by the Northwest Regional Educational Laboratory, indicates that there are several effective instructional leadership practices contributing to a positive school climate and culture. These include, at the *school* level:

2.3.1 Strong Leadership Guides the Instructional Program

c. The leader has a clear understanding of the school's mission and is able to state it in direct, concrete terms. Instructional focus is established that unifies staff.

f. The principal and other leaders seek out innovative curricular programs, observe these, acquaint staff with them, and participate with staff in discussions about adopting or adapting them.

g. Leaders set expectations for curriculum quality through the use of standards and guidelines. Alignment is checked and improved; priorities are established within the curriculum; curriculum implementation is monitored.

i. A safe, orderly school environment is established and maintained.

j. Instructional leaders check student progress frequently, relying on explicit performance data. Results are made visible; progress standards are set and used as points of comparison; discrepancies are used to stimulate action.

k. Leaders set up systems of incentives and rewards to encourage excellence in student and teacher performance; they act as figureheads in delivering awards and highlighting the importance of excellence.

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r. Leaders involve staff and others in planning implementation strategies. They set and enforce expectations for participation; commitments are made and followed through with determination and consistency; leaders rally support from the different constituencies in the school community.

2.4.1 There are High Expectations for Quality Instruction

f. The principal and other school administrators hold high expectations of themselves, assuming responsibility for student outcomes and being visible and accessible to staff, students, parents, and community members.

2.7.1 Parents and Community Members are Invited to Become Involved

a. Administrators provide ongoing support to parent involvement efforts.

At the *district* level:

3.4.1 Improvement Efforts are Encouraged, Supported, and Monitored

f. Building managers participate in ongoing programs of staff development focused on strengthening instructional leadership skills; building administrators are also encouraged to pursue other professional development activities.

These practices can all be found at both the Demonstration School and Annie T. Sale Elementary School in the Columbus Municipal School District, Mississippi. The *Onward to Excellence* (OTE) school improvement process has been used there to enhance existing leadership practices and to develop new ones, which have contributed to increases in student achievement. Leaders include staff from all milieus--district office, principals, OTE team coordinators and members, and faculty, including noncertified staff.

COLUMBUS MUNICIPAL SCHOOL DISTRICT

Situation

Columbus, Mississippi, located near the Alabama line in the northeast corner of the state, has a population of nearly 24,000 of which 51.2 percent are African-American and 48 percent are Caucasian or "other."

During the 1993-94 school year, 5,840 students were enrolled in the district's schools. Fourteen buildings house one high school with students in grades 11 and 12; one high school serving students in grades 9 and 10; two middle schools, one for grade 8 and one for grade 7; ten elementary schools, of which three have grades K and 4-6, four have grades K-6, and three have grades K-3; one alternative school with grades K-12; and a vocational center with grades 11 and 12. In each of the elementary schools there are specialists in the areas of physical education, music, library, art and counseling.

The student population in the district is 72 percent African-American and 28 percent Caucasian, Asian, and Hispanic students. District school improvement director, Gerald Scallions, notes that a 28 percent non-African-American enrollment is relatively high for Mississippi, where many families send their children to private schools.

In May 1994, residents of Columbus passed a $17 million bond which included funding for the reorganization of the school district. The plan calls for considerable reorganization of the district's schools, resulting in one high school with grades 9-12, one middle school with grades 7 and 8, one elementary with grades 5 and 6, nine elementary schools with grades K-4, and the vocational center serving students in grades 11 and 12.

Context

The Weyerhaeuser Company Foundation established a partnership with the district in 1989 and initially provided a grant for district-wide school improvement through training of OTE leadership teams in all of the district's schools. Weyerhaeuser's rationale for provid-

ing this support is that aid for school improvement is part of its stewardship in communities in which Weyerhaeuser plants are located.

In the fall of 1991 the district was awarded a Weyerhaeuser International Paper Company Foundation school improvement grant. Use of the OTE process was tied to the state requirement for staff development and the professional recertification program for teachers. This research-based school improvement process was adopted by the Columbus School Board and is included in the district's long-range master plan for renewal.

The domain of OTE process is the local school level, where it is used to improve student performance in three areas: academic achievement, attitude, and social behavior.
In each of the 16 OTE school sites in the district, those involved in the process decide what learning goal(s) to set and develop plans to achieve the goal(s). Then, in 1993 Weyerhaeuser gave $100,000 to the district to implement the OTE plans. At the end of the 1993-94 school year the schools were expected to report to the company regarding spending levels and progress towards achieving the OTE goals.

Practice: District Support for School Improvement

Gerald Scallions, who is responsible for organization and management of the OTE process, provides some background information. With regard to the two schools that are the focus of this article, Scallions notes that both the Demonstration School and Sale Elementary School have made very productive use of the OTE process and the Weyerhaeuser Company Foundation Grants in their school improvement efforts. Both schools, he points out, have high minority populations and higher achievement levels than their demographics would predict.

In his OTE organizing and managing efforts, Dr. Scallions asserts that he does not interact only or even chiefly with school principals, but rather counsels with the OTE chairpersons/ coordinators of the individual schools. In this way, he communicates respect for a basic feature of the OTE approach: that the leadership team, with the principal as a team member but not the chairperson--manages the school improvement work within each school. Dr. Scallions comments on the district's role in Sale Elementary and the Demonstration School successes detailed in the following pages: It involves "going back and reviewing the steps of the OTE improvement process, repeatedly calling the building coordinators, and reinforcing the OTE principles."

DEMONSTRATION SCHOOL

Situation

Established in 1907, the Demonstration School is the first and only laboratory school in the state. Since the Depression era, it has been operated jointly by the Columbus School District and Mississippi University for Women (the first public-supported college for women in America), on the campus of which it is located. The district provides about 80 percent of the school's operating expenses, primarily from Minimum Foundation Funds from state and local revenue. The 1991-92 school year per-pupil expenditure was $3,860. Small classes, parental involvement, and its advantageous position on a college campus were the foundations on which the school grew. Today, it is still characterized by small classes and a "homey" atmosphere.

The K-6 classroom teachers are required to have a minimum of a masters degree and three years' teaching experience at the elementary level in order to qualify for an assignment at the Demonstration School. Regular full-time teachers are paid on the same salary schedule as other teachers in the district, although they receive a small stipend in recognition of their services to the university's lab school. In addition to serving as principal, Alma W. Turner holds the post of assistant professor of education, with responsibility for teaching a methods course held in a Demonstration School classroom for the teacher training program of the university.

In recognition of her exemplary leadership, Mrs. Turner was nominated and selected by her fellow principals, through a statewide search sponsored by the National Association of Elementary School Principals and the U.S. Department of Education, to represent Mississippi as its Distinguished Principal for 1994.

There is a 20:1 ratio of students to classroom teachers at the Demonstration School. Pupils are organized into traditional graded classes, with some cross-grade grouping in reading to provide for individualization. At the present time, the school maintains one room for each grade level from kindergarten through sixth grade. Additional instructional areas include remedial reading and math, gifted, a media center, and a well-equipped "Writing-to-Read" computer lab.

The school's population of approximately 180 students reflects the community in its ethnic composition (57 percent African-American, 42 percent Caucasian, and 1 percent "other") and in its fairly wide range of socioeconomic backgrounds. Some parents are in the professions, but, for the most part, the children are from the homes of middle- to low-income skilled and unskilled workers in neighborhoods surrounding the university campus. Residents rent and buy houses in the area so that their children can attend the Demonstration School, a neighborhood-zoned, desegregated school with no busing, which was a unique situation in the district prior to the recently passed bond-financed reorganization plan.

Context

At the Demonstration School the OTE leadership team, together with the rest of the faculty, reviewed SAT total reading battery scores in the school performance profile and determined that the scores in reading, the weakest area, were decreasing. There was a drop of 10 percent--from 56 percent in 1990 to 46 percent in 1991--in students performing in the top two quartiles. From 1988 to 1991 there had been a steady decline in NCE rankings--from 58.5 to 50.0. Demonstration School staff members chose the improvement of SAT reading scores as the school's improvement goal on the rationale that "if students could read well, they would perform better on tests and on future jobs." They set a long-range goal for the next three-to-five years to have at least 90 percent of their students scoring in the top three quartiles of the SAT. The short-range target for the 1992-93 school year was to increase students' performance scores in the top three quartiles to 75 percent from the 1991 score of 69 percent.

The OTE leadership team involved the entire Demonstration School staff in reviewing the effective schooling research related to the improvement of reading. Being located next door to the university library made the information easily accessible. The staff selected instructional methods and techniques shown by their review of the research to contribute to the improvement of student performance in reading. Ideas selected included use of computers for instruction and practice, study skills, strategies for dropout prevention, peer tutoring, mastery learning, motivational strategies, techniques for working with at-risk students, and classroom management.

Virginia Lindsey, school librarian and OTE leadership team member, believes that the "step-by-step organization of the OTE process" is the reason it has worked at the school. While conducting the literature review, she learned about a grant that was available for the purchase of computer software. She completed an application, the school was awarded a grant, and staff used it to purchase a Macmillan reading program and two computers. That first successful grant application ignited the school's improvement efforts. Funding has been provided via the Weyerhaeuser OTE grant for the purchase of placement tests, "TestBest" practice SAT tests from Steck-Vaughn, and the "Connections" reading tutorial series with listening libraries from Macmillan/McGraw Hill.

Practice: Buildingwide Reading Promotion

Books keyed to the adopted reading program were purchased for the school library collection. The librarian also developed a collection related to instruction in formal reading skills in grades 3-6 and informal reading skills in grades K-2. In support of the library, the PTA funded a committee of parents, students and staff to operate an "Adopt-a-Book" program. Relatives and friends of Demonstration School students purchase the committee's selected books. They then donate the books, in which dedication plates are affixed, to the library.

Parents and community volunteers conduct a Junior Great Books program for all the children in all the grades. Volunteers are trained by a local coordinator who has received

training from the Great Books Foundation. Groups of eight to ten students meet each week with volunteer discussion leaders. All the children take the books home, and they are expected to read the books or to have the books read to them by parents or other adults.

Each morning for 15 minutes everybody in the building, including the janitor and visitors, silently reads for pleasure. This sustained silent reading program named STARS (Students That Are Reading Silently) was made possible by a Weyerhaeuser Company Foundation grant. A wide variety of children's fiction and nonfiction books are marked with a star and circulated amongst the classrooms. These books are not checked out; they are meant to be read in the classroom during STARS time.

Students have enthusiastically taken to the idea. One fourth grade boy says he looks forward to each morning's reading session: "The best thing," he said, "is having time off from doing work." Asked about her favorite school subject, a sixth grader replied, "Reading. The time of day that we start reading is good. I like the program a lot. I read all kinds of books and spend a lot of time doing that." A girl in the second-grade likes to read and look at colorful pictures in books. "I like playful things about cats and dogs," she elaborates. A first grader thinks reading is fun, adding, "I like to look at the pictures and read about the 'Teenage Mutant Ninja Turtles'." Book-It, a program sponsored by Pizza Hut restaurants and promoted by the staff, is also popular with the students. Free pizza is the students' reward at the end of each month for reading a minimum number of pages.

An emphasis is placed on book reports by the classroom teachers. Further evidence of supporting an appreciation of books was the evening book and author party hosted by the gifted education program.

Everyone is important at the Demonstration School; respect for all people is taught and modeled. Desired behavior, speech, dress, etc. are emphasized. The children are taught that, because of the uniqueness of their laboratory school, it is everyone's responsibility to set a good example. One hears teachers admonishing wayward students with a mild, "Where are you from?" followed by a controlled chorus of "Demonstration School!" "Students know how to behave" avers the principal, Alma Turner. Her quietly and seriously spoken, "You have disappointed me," serves to discipline an unruly child.

The results of emphasizing desired behavior can be seen during the students' lunch. Observing the social graces, everyone sits at a table before anyone starts to eat; napkins are in laps, and the decibel level of talking is low.

The children's comfort in this environment is evidenced by the school's receipt of an award for the previous four months for having the highest rate of attendance in the district.

Results

There was an increase from 72 percent of students' SAT reading scores in the top three quartiles in 1992 to 74 percent in 1993. That gain was slightly below that year's goal of 75 percent; however, that goal was surpassed in 1994 when the percentage of students scoring in the top 3 quartiles was 76 percent, moving the school closer to the long-range goal of 90 percent.

More information about the Demonstration School and its programs is available from Alma Turner, Principal, Demonstration School, 429 South 11th Street, Columbus, Mississippi 39701, 601/329-7358

ANNIE T. SALE ELEMENTARY SCHOOL

Situation

Annie T. Sale Elementary, a K-3 school with an approximate enrollment of 280, is surrounded predominantly by separate houses in a well-kept residential community. However, 70 percent of the children are bused to the building, with the majority coming from two large housing projects and several federally subsidized housing units. Currently, children in grades 4-6 who reside in the attendance area are bused to a "pair" school--a situation that will change with the recently passed bond. About 65 percent of the students are African-American. The free and reduced-price lunch rate is about 62 percent, and the mobility rate approximately 20 percent.

Each self-contained classroom of kindergarteners, first graders, and second graders has the services of an assistant teacher for the entire school day, and one of the third grade classes has a full-time Chapter 1 aide. In considering the district's reorganization plan, Principal Rebecca Taylor notes that it may be problematic for some of the approximately 30-member Sale faculty, because the selection of staff for schools following the reorganization will be influenced by seniority. Transfers will possibly affect Sale's "sense of family." Ms. Taylor notes, however, that districtwide use of the OTE process will ease the difficulties associated with upcoming changes, since everyone is familiar with the same concepts, terms, and improvement steps.

Context

Standardized testing data showed that 1991 NCE scores had declined to the 48.7 percentile across the board on the SAT. Remediation efforts, which had been underway for several years, had been largely ineffective. The challenge faced by the staff was to find ways other than remediation efforts to improve learning and raise the low SAT scores. Because the staff did not want to reduce emphasis on the basic skills by isolating a single curricular area, they decided to establish as their goal improving performance on the overall test battery. They also concluded that it was enrichment that was needed, not more remediation. The adopted goal statement is, "The students shall show an increase in the total battery Normal Curve Equivalent (NCE) scores as measured by the Stanford Achievement Test. At the end of one year students will be performing at a total NCE score of 52 and at the end of three years they will be performing at 57."

The Sale Elementary School improvement prescription (that is, the written set of practices, methods, and techniques derived from research on schooling and from craft knowledge) was developed in the early 1992-93 school year. The faculty and staff were divided into six teams to read the effective schooling research and to identify teaching strategies and other effective practices related to their goal. The most powerful, manageable, and usable strategies appear in the final prescription.

After reading the research on learning styles, the staff concluded that the tactile/kinesthetic style is one style that all young children utilize. That style choice led to a plan for using manipulatives in mathematics and across the curriculum to raise overall academic achievement. Cooperative learning was also identified as a research-supported approach for addressing different learning styles.

The staff development plan for 1993-94 was designed to move the school towards its goal by focusing on the use of manipulatives across the curriculum to respond to the learning styles of K-3 students. Staff also identified ways to establish and communicate high learning expectations to students.

Practice: Enriching the Curriculum

The process by which the staff developed the building's math centers illustrates the effective leadership at work in the school. The staff cooperatively compiled a list of the math skills to be addressed via use of manipulatives organized in learning centers. Ms. Taylor assigned each teacher and herself a math skill for which to develop a center. Action steps were then implemented, calling for each person to:

1. Research her objectives or activities and materials
2. List specific costs, catalogues, or resources
3. Meet with team to review sample activities and materials
4. Order enough materials for each classroom
5. Compile kits for her activities with specific directions for each
6. Hold inservice meetings to demonstrate the use of each activity where needed.

The result was several impressively planned and executed math centers housed in large plastic garbage bags stored on the school's stage and shared by staff. The key to the success of the self-checkout system is the staff's openness, cooperation and mutual

support. Before the annual SAT, the math centers, organized by grade level skills, are set up in rooms for entire classes to visit and use. During my time at Sale Elementary, I observed a Chapter 1 assistant supervising students from three different classes using math manipulatives.

In a previous year, the science centers were developed by the same process as that used in creating the math centers. Once a year all of the science centers are set up in the gym for one week. During that week, classes are scheduled to use the centers appropriate to their grade levels. The centers are also used during the year in classrooms. Mrs. Belue, one of the kindergarten teachers with a strong interest in science, uses activity centers with a science emphasis throughout the year in her classroom. Each child goes to two of the eight centers each day with one or two other children. On Fridays, the children are given a free choice of centers after completing the week's work.

Walking around Sale Elementary reveals additional sights that underscore the school's strong focus on learning, e.g., a spot video and photographs of students using the math and science centers, and an evolving outdoor classroom with a math and science focus located just outside the library's window wall.

Results

Rebecca Taylor reported that the Sale staff met the first year's short-range OTE goal and set another short-range goal for the second year. They are also working toward a long-range goal for the building.

The SAT-8 is a standardized achievement test of basic skills. All Sale students were tested during the month of April for the years 1989 through 1994. For grades 1-3 there has been a four-year steady increase in total battery NCE scores, from 48.7 in 1991 to 54.6 in 1994. The long-range goal for spring 1994 was 57, so there is room for continued growth.

Ms. Taylor reports that the students exhibit more excitement now about math. Their behaviors have improved, particularly at those times, such as cooperative learning periods, when no direct instruction is occurring in the classrooms.

Those desiring more information about Sale Elementary School are encouraged to contact Rebecca Taylor, Principal, Sale Elementary School, 520 Warpath Road, Columbus, MS 39702, (601) 327-1482.

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SCHOOL IMPROVEMENT RESEARCH SERIES
"Research You Can Use"

Snapshot #34

Promoting Student Mathematics Learning Through a Hands-on and Visual Math Program

Portsmouth Middle School
Portland, Oregon

Joan M. Shaughnessy

Research Findings

New instructional approaches being used by mathematics teachers at Portsmouth Middle School in Portland, Oregon encourage students to construct their own understanding of mathematical concepts rather than to work through textbook drills. To revamp their program, these teachers chose to adopt a visual mathematics curriculum, an approach founded upon practices supported by research.

Drawn from the Northwest Regional Educational Laboratory's *Effective Schooling Practices: A Research Synthesis / 1990 Update*, the research-based practices demonstrated in the Portsmouth program at the *classroom* level include:

1.2.1. Instructional Groups Formed in the Classroom Fit Students' Academic and Affective Needs

e. Small groups are used for instruction and practice in the use of higher-order thinking skills.

g. Peer tutoring and peer evaluation groupings are used to make optimum use of time and to insure that students will receive the assistance they need to learn successfully.

1.3.3. Effective Questioning Techniques are Used to Build Basic and Higher-Level Skills

g. When students' initial responses are inaccurate or incomplete, teachers "stay with" them, probing their understanding and helping them to produce better answers.

1.4.1. There are High Expectations for Student Learning

d. Teachers hold students accountable for completing assignments, turning in work, and participating in classroom discussions.

Effective practices at the *school* level include:

2.3.3. Staff Engage in Ongoing Professional Development and Collegial Learning Activities

f. Skill-building activities are delivered over time, so that staff have the opportunity to practice their new learnings and report outcomes.

g. Staff development activities include opportunities for participants to share ideas and concerns regarding

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the use of new programs and practices.

h. Ongoing technical assistance is made available to staff as they pursue school improvement activities.

k. Staff members learn from one another through peer observation/ feedback and other collegial learning activities.

Situation

Portsmouth Middle School is a large, urban intermediate school within the Portland Public School District in Portland, Oregon. Portland is the largest city in the state, with a school district that serves 54,000 students. There are 18 middle schools in the district, all serving sixth, seventh and eighth graders.

Portsmouth's location just north of city center means that it encompasses a racially diverse inner-city population. Whites comprise the majority of the 550 students in the school. Twenty-five percent of the students are African American, six percent are Asian, four percent are Hispanic, and three percent are American Indian. Forty-one percent of the students qualify for free lunch, and another eight percent are eligible for reduced-price lunches.

Context

Staff interest in using a new approach for teaching mathematics was sparked after one teacher participated in the Middle School Math Project, a National Science Foundation curriculum development project at Portland State University. Additional support for staff development at Portsmouth was funded by QUASAR (Qualitative Understanding: Amplifying Student Achievement and Reasoning). QUASAR is a Ford Foundation program designed to support and study the implementation of instructional programs in disadvantaged communities.

As participants in QUASAR, all four Portsmouth math teachers received summer training to adopt a visual approach in their mathematics instruction. Student growth in problem solving was also tested by QUASAR researchers.

The philosophy of visual math permeated both the teachers' inservice and the middle school classrooms. This change to a new view of mathematical learning is a journey that began with the teachers themselves experiencing a profound change in their relationship with mathematics. As teachers learned to construct their own solutions to problems, they became aware of the personal nature of learning. Using manipulative materials and sketches to solve problems promoted their confidence in the their own problem-solving strategies. Portsmouth staff realized that a substantive changes in math would not be implemented simply by changing textbooks or by mandate from the administration. A major shift in instructional focus required that teachers develop new skills, behavior and beliefs.

As teachers developed new understandings about math, they became aware that previously they had been "feeding" a set of preestablished procedures to the students and training students to "parrot back" these procedures. That form of instruction was seen as *teacher centered*. To reorient the instructional process toward being more *student centered*, teachers needed practice in stepping away from center stage and using class time to focus instead on students' exploration of math concepts.

Staff also realized the needed instructional changes were multifaceted and complex and could not be made without thought and planning. Fortunately, funding from the QUASAR project provided the staff with time to work on a schoolwide approach for mathematics instruction. Changes to be incorporated at the classroom level were determined by the teacher team based on principles of both group consensus and individual freedom. This meant that some instructional practices were used by all teachers, and others were modified to meet the needs of each teacher. These decisions were made in collaborative meetings.

Focus on Curriculum Standards Developed by the National Council of Teachers of Mathematics

The NCTM Curriculum and Evaluation Standards for School Mathematics (National Council of Teachers of Mathematics, 1989) served as the foundation for innovations in math instruction at Portsmouth. At the middle school level, NCTM advocates a concept-driven curriculum that encourages students to communicate with and about mathematics. Engaging students is regarded as the key to motivating them. According to NCTM, learning at this level should engage students both intellectually and physically, so that they become active learners. NCTM recommends that concrete experiences be provided to students to help them grasp abstract, complex concepts. The ideal curriculum should feature problem situations using activities that are tactile, auditory and visual.

USE OF VISUAL EXPLANATIONS

Rather than focusing on arithmetic calculations and repetition of drill and practice, mathematics class time at Portsmouth is an exploration of concepts using visual and hands-on models. Students generate their own mathematical algorithms for such operations as multiplying positive and negative integers or dividing fractions and for calculating surface area. Using the overhead projector, teachers display the use of sketches or manipulatives that students can use to explore these concepts. Teachers demonstrate visual representations of a problem and then encourage students to reason their way through problems. The bulk of class time is devoted to student problem-solving work in cooperative teams. When several teams have devised a solution, students demonstrate their own mathematical reasoning by illustrating their team's solution at the overhead projector.

EMPHASIS ON HOW'S AND WHY'S

The math teachers at Portsmouth have all made conscious choices to emphasize the importance of students' development of their own problem-solving strategies. When each problem is introduced, teachers avoid a pre-set way to solve that type of problem. Instead, teachers encourage students to draw or build a representation of their thinking about the problem. Students use the overhead projector to explain their reasoning on problems. In each math classroom, students illustrate their unique solutions, and these are taped onto blackboards around the room. Teachers repeatedly state that they value the students' thinking and their ability to explain their thinking.

Teachers make a point of not asking students to state the correct answer. Instead, they constantly request that students communicate the process they used to solve the problems. Sometimes the students develop new and novel explanations for a problem, and at other times, their explanations provide the teachers with a better understanding of student misconceptions.

Program Features

COOPERATIVE LEARNING GROUPS

The visual math approach is built upon small group interaction. Seating in all math classes is arranged around working groups of three to five students. Usually, problems are introduced to these groups, and then students work together to sketch out a strategy for problem-solving. Small groups are also asked to take responsibility for the learning of everyone in the group. Periodically, student groups are given a rubric sheet and are asked to rate their own skills and efforts on behalf of their team and the group's ability to work together.

CHANGES IN ASSESSMENT

Math grades are not based upon the number of correct answers a student can generate. In fact, traditional letter grades or numerical tallies of quiz scores are not kept. Instead, all students keep portfolios of their work. Work is reviewed by the teacher, who provides feedback to the students using a rubric that identifies work as exceptional, quality, needing revision or incomplete. Students are expected to redo any work that needs revision.

The portfolio includes not only written explanations of problem solving, but also documentation of times that students explained their thinking to other students. These explanations can happen either at the overheard

projector or in small group work. This documentation takes the form of "post-it" notes that students add to their portfolio work to jog their own memories about their successful experiences and their efforts to tackle difficult problems during math class.

PORTFOLIO NIGHT WITH PARENTS

Students are all expected to share their work with their parents at an annual evening meeting. These portfolios include specific descriptions about student effort and mathematical performance. Students prepare for this portfolio night by preparing a summary sheet listing their strengths and areas for improvement.

Students have been taught the importance of demonstrating their work and encouraging each other's work, so they share what they have learned about positive feedback with their parents on portfolio night. For example, in one classroom, several students volunteered to demonstrate visual problem-solving techniques to the parents. Another classroom decorated the room with caricatures mimicking parental positive and negative feedback. Student contributions during portfolio night are written up and added to their portfolios.

JOURNAL WRITING

When students assemble a model of a math problem or sketch a picture, they are called upon to use their own powers of observation and reflection. All students are expected to keep a record of what they are learning in their math journals. A list of journal topics is posted in each classroom. Students are asked to use their journals to:

- Record their experiences solving problems with a group
- Make observations or generalizations
- Participate in class or small group discussions
- Explain their ideas
- Share their thinking at the overhead.

Keeping a journal is difficult for the students at first, but their ability to articulate and reflect on their experience improves over time. Students take responsibility.

Visual Math in Action

Watching one of these math classes unfold is a unique experience. The class began with students plopping themselves down in their cooperative work groups. The teachers quickly distributed the math manipulative materials to be used for the day's work. In a lesson on multiplying with negative integers, the class of seventh grade students received a set of red and black squares to represent positive and negatively signed numbers. The teacher briefly reviewed how to use these squares to represent a multiplication problem. She displayed the use of manipulatives at the overhead.

Then students worked with the colored squares to "solve" a multiplication problem at their own desks. (The solution was not a number, but instead a grid of colored squares). The teacher asked one student to display her grid of colored squares at the overhead and to explain her thinking in reaching this array of squares. As the student gave her explanation to the class, the teacher scanned the room and saw that some of the students have different configurations of black and red squares. A boy with a different "solution" was asked to explain his thinking at the overhead also. Seeing two discrepant solutions caused several students to question some of the premises they had seen demonstrated. These students called out their questions to the student standing at the overhead, and he repeated his explanation. Seeing the confusion, two more students said they could help, and they volunteered to explain how they approached this problem. They took their colored squares to the overhead and explained their thinking to the class.

As these students finished their explanations at the overhead, the teacher thanked them for their contributions, but she did not tell any of them that they were right or wrong. Discussing the correctness of a solution process became the responsibility of the class, not of the teacher exclusively. While the teacher did repeat or rephrase a student's question during the explanations at the overhead, she did not end the students' conversations about the problem by giving the class the answer. Instead, she let the students' perturbation drive the discussion. The class as a group reached some agreement on the principles being demonstrated by the manipulatives.

For the next ten minutes of the class, students used their colored squares to display other multiplication problems or, if they were ready to do so, they drew sketches of these on their papers. Students proceeded through these at their own pace but turned to others in their work group to ask questions and get clarification.

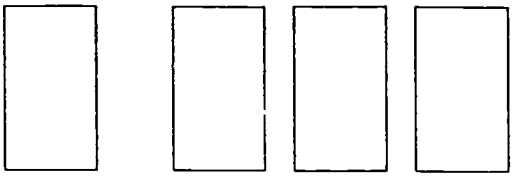
In the last few minutes of the class period, students recorded their observations about the lesson in their journals and then re-bagged their materials to drop them into a bin as they filed out of the classroom.

Over time, students internalize some understanding of the math concepts and begin to work with drawings of the problem rather than manipulatives. Later in the school year, two teams in this seventh grade class approached the following problem by sketching visual diagrams of the information in the problem: *If 50 gallons of cream with 20% butterfat is mixed with 150 gallons of milk with 4% butterfat, what percent butterfat is the mixture?*

One of the teams chose to display the 50-gallon and the 150-gallon containers as four 50-gallon boxes. The team chose to draw a grid in each of the boxes to represent the number of gallons and to darken the number of gallons that were butterfat. Once this diagram was drawn, they could actually count the number of gallons of the total mixture that were butterfat and easily calculate the percent.

10 squares in this one are butterfat

6 of the squares in these three are butterfat

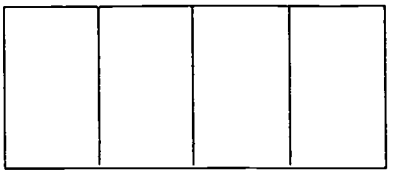


Each box is equal to 50 gallons.

A second team drew a diagram that demonstrated their knowledge of fluids and talked about how the mixtures would flow together and equalize the butterfat in each of the four containers.

Teams each worked together with one or two students drawing a picture. Student sketches varied groups, with another of the drawings are illustrated depicted below:

The top 20% of the first box is butterfat. The top 4% of the other three containers is butterfat.



When you stir them together the fat will stay at the top. We will just average the percents.

The mathematical equation for solving these problems had never been demonstrated to these students. Instead the strategies have been derived from their team discussions and sketches.

Program Concerns and Suggestions for Success

Interviews with Portsmouth teachers revealed their own struggles in making such a dramatic shift in math instruction. Teachers warned that this approach brings with it a certain amount of disequilibrium. One teacher described the process: "We are no longer doing 'cookbook' math. Students are working out their own solutions, and at times they are confused. It is my job to help them understand that disequilibrium is all right. It means that they are struggling and that, in reality, confusion is a condition for real learning."

Teachers also described the reluctance some students have to creating their own mathematical approaches. One teacher recalled that the biggest resistance came from the kids who had been most successful with traditional math. These students were the ones who "had always successfully memorized the rules. These kids had confidence in their math ability. They felt that there was one way to do a problem, and they longed for someone to show them that one way." This teacher went on to say that she had to spend some time reassuring these kids that this approach was harder, but that learning a way to reason out the problem was giving them skills in thinking.

The process of managing hands-on manipulatives can be a logistical challenge to teachers. The Portsmouth teachers emphasized the need for materials to be well organized and accessible. Teachers need appropriate storage bins and resealable plastic bags to

hold the materials so they can easily be distributed to groups of students. The teacher needs to develop a system so students can collect and store materials quickly and efficiently at the end of the class period.

Being able to "win" parents over to the program is another necessity. As one teacher reported, "The math we do looks like Greek to most parents. They can't just come in and look at students' papers. They have to experience the process themselves." Teachers feel that Parent Nights are essential. Once parents understand the approach, they often turn from being resistant to being advocates for the approach. Parents sometimes express appreciation that their own understanding of math has been expanded. One parent confided in a teacher that the way he had learned math was "really more appropriate for the 18th century. This math is for the 21st century."

The risk of trying a new approach often raises staff concern that such a dramatic shift in instructional practices might interfere with student learning of basic math skills. The math staff, however, managed to allay initial anxieties and have continued with this approach for three years. Test data collected at the end of this time have demonstrated the effectiveness of the new approach.

Program Effectiveness

There have been significant improvements in three areas: student abilities in problem solving, student placement into high school courses, and student beliefs about mathematics.

Problem-solving skills were assessed by a cognitive assessment instrument administered during the third year of the program. This measurement tool, named the Cognitive Assessment Instrument, was developed by QUASAR. It includes 35 open-ended mathematical tasks and a procedure for focused holistic scoring to assess student responses. Scores for each problem ranged from a zero, which meant that student responses showed no understanding, to a four, which indicated that students' responses and rationale for their answers were both logical and clearly communicated. The instrument was administered in the fall and spring of the same school year to measure student growth. In the fall of 1992, 33 percent of the seventh graders gave high quality responses (scores of 3 or 4) to the majority of the problems. In the spring of 1993, the incidence of high-quality responses increased to 45 percent.

Data were also compiled from a citywide math test given each spring to place eighth grade students into general math, pre-algebra and algebra classes in high school. The percent of students scoring highly enough for placement in the more challenging courses has shown a dramatic increase:

	Percent Admitted to Pre-Algebra	Percent Admitted to Algebra	Total Percent
Spring 1991	38	8	46
Spring 1992	36	16	52
Spring 1993	34	29	63

Students who have been interviewed about this math program described an array of reactions. Some students liked the changes in grading. In interviews, these students said that having access to all of their work in a portfolio lets them know where they stand. They have the chance to review their work and see the improvements they make. Other students said that it has been uncomfortable for them to grade their group work and hard for them to write about themselves.

The teachers reported some dramatic improvements in student skills--both in their ability to work with other students and in their ability to take control of their own learning.

For additional information about this program, contact Heather Nelson at Portsmouth Middle School, 5103 North Willis Blvd., Portland, Oregon 97203, (503) 280-5666.

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September 1994

Snapshot #35

Applying Total Quality Management Principles to Secondary Education

Mt. Edgecumbe High School
Sitka, Alaska

Kathleen Cotton

Quality is never an accident.
It is always the result of intelligent effort.
It is the will to produce a superior thing.
--John Ruskin

It requires a quality experience
to create an independent learner.
--Myron Tribus

Research Findings

As they work to establish a norm of continuous improvement, staff and students of Mt. Edgecumbe High School in Sitka, Alaska exhibit many characteristics congruent with the research on effective schooling. As drawn from the Northwest Regional Educational Laboratory's *Effective Schooling Practices: A Research Synthesis / 1990 Update*, findings which are particularly relevant include the following.

At the *classroom* level:

1.1.1 Instruction is Guided by a Preplanned Curriculum

d. Resources and teaching activities are reviewed for content and appropriateness and are modified according to experience to increase their effectiveness in helping students learn.

1.3.1 Students are Carefully Oriented to Lessons

b. Objectives may be posted or handed out to help students keep a sense of direction. Teachers check to see that objectives are understood.

1.3.2 Instruction is Clear and Focused

b. Teachers are sensitive to the learning style differences among students, and, when feasible, they try to identify and use learning strategies and materials which are appropriate to differing styles.

e. Students are taught strategies for learning and for remembering and applying what they have learned....

1.4.3 Personal Interactions Between Teachers and Students are Positive

c. Teachers communicate interest and caring to students both verbally and through such nonverbal means as giving undivided attention, maintain-

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School, Community and Professional Development Program

ing eye contact, smiling, and positive head nodding.

d. Students are allowed and encouraged to develop a sense of responsibility and self-reliance. Older students, in particular, are given opportunities to take responsibility for school-related matters and to participate in making decisions about important school issues.

e. Teachers foster positive teacher-student and student-student relationships through the use of cooperative learning strategies.

At the *school* level:

2.1.1 Everyone Emphasizes the Importance of Learning

b. The principal and other administrators continually express expectations for improvement of the instructional program.

2.3.2 Administrators and Teachers Continually Strive to Improve Instructional Effectiveness

a. No one is complacent about student achievement; there is an expectation that educational programs will be changed so that they work better.

2.3.3 Staff Engage in Ongoing Professional Development and Collegial Learning Activities

Situation

Sitka, Alaska is located in the southeastern part of the state on Baranof Island and is home to approximately 8,500 people. Tourism, timber, and fishing are Sitka's major industries. Originally populated primarily by Tlingit Indians, the area in and around Sitka has also experienced a long-term Russian presence, and the area's art, architecture, cuisine and other cultural features reflect these two lines of ethnic influence.

Named after an imposing, nearby volcanic mountain, Mt. Edgecumbe High School is in many ways an atypical secondary institution. It is a residential school attended by approximately 300 young people from all over the state. About 80 percent of Mt. Edgecumbe's students represent at least 14 Native American and other ethnic minority groups. A quarter of the school's population comes from families with poverty-level incomes, and over 40 percent of them--most frequently those from families in the fishing business--qualify for migrant education services. Formerly a Bureau of Indian Affairs boarding school, Mt. Edgecumbe High School has been operated by the State of Alaska since 1985.

Context

TRANSITION TO A STATE-OPERATED SCHOOL

With the early 1980s legislation requiring that high school education services be made available in all Native villages, Mt. Edgecumbe High School's 36 years as a BIA-operated boarding school came to an end. The federal closure of the school lasted for only a few months, however, because significant numbers of Alaska Natives who had once attended the school began to call for it to be reopened. Accordingly, the state board of education voted to reopen Mt. Edgecumbe and, after necessary building renovation, it began operating as a state school in 1985, with an 88 percent Native student population.

Concern about preparing Native youth for tomorrow's education and employment opportunities led to key curriculum decisions by state board and school staff members. These included: (1) a focus on technology applications; (2) emphasis on real-life entrepreneurship skills; and (3) designation of English, computers, mathematics, social studies, science, physical education, and Pacific Region studies as the school's core subjects.

"TOTAL QUALITY MANAGEMENT": LEARNING ABOUT SYSTEMIC IMPROVEMENT

Teachers attend conferences all the time; but seldom has this kind of event had such far-reaching impact as the participation of Mt. Edgecumbe's former technology/business teacher at a Total Quality Management (TQM) conference in Arizona in the summer of 1987.

This teacher learned about the "fourteen points" for quality in business operations as put forth by W. Edwards Deming, widely regarded as the "father" of the TQM movement. He also became familiar with the "three C's"--a focus on *customers*, *culture*, and *capacity for continuous improvement*--which are the signature features of total quality environments and which many successful businesses have used to rejuvenate themselves. As described in the National Alliance of Business publication, *The Cutting Edge of Common Sense: Total Quality, Education, and Systemic Change* (1993):

> **The Customer**....total quality really has two kinds of customers in mind--the *external* customers , who "consume" the product or service offered, and the *internal* customers, i.e., those who, in the process of creating a product or service, receive the output of another's work, with each successive person adding something of value....if everyone does his or her job in a way that eliminates problems for the next person up the line, the final customer... will be satisfied....
>
> **The Culture.** A successful change strategy involving quality management also involves a commitment to create a specific kind of organizational culture, based on trust and shared decision making....
>
> **The Capacity.** Leaders in quality-oriented companies seek ways not merely to change but to manage and instill the change process itself: in Deming's terms, they achieve "constancy of purpose"....
>
> MOST IMPORTANT: IN ANY ORGANIZATION, TOTAL QUALITY IS ABOUT SYSTEMIC CHANGE
>
> The "lead actor" in TQM is...the process of systemic change itself...The point is to develop the organization as an integrated, organic set of relationships, and to *gain the ability to change and direct those relationships again and again in the direction of improvement*--as defined by the organization's internal and external customers.

These and other TQM concepts, together with their potential application in educational environments, were introduced upon the business/technology teacher's return to Mt. Edgecumbe High School. He began to utilize TQM principles in his computer class. Within a year, students from the computer class prepared and gave presentations--both at Mt. Edgecumbe and elsewhere--on the beneficial effects of TQM principles on their school experiences and personal lives. Interest in the TQM approach spread among Mt. Edgecumbe staff and students, and in a few months, the business/technology teacher, then-Superintendent Larrae Rochelean, and Academic Principal Wilhelm Denkinger attended TQM workshops presented by W. Edwards Deming.

Shortly after receiving training, they presented to the entire academic staff a proposal to implement the TQM approach schoolwide. Favorably impressed with what they had seen of TQM thus far, 100 percent of the academic staff agreed to proceed with implementation.

TQM COMPONENTS IN THE HIGH SCHOOL

Mt. Edgecumbe's implementation of TQM principles has proceeded from an adapted version of Deming's fourteen points for quality in organizations. Called "Mt. Edgecumbe High School's Modified Deming Points for Quality in Education," these goals have been reviewed and updated as the school's program has evolved. Because they guide all of Mt. Edgecumbe's operations, the "points" are reproduced here in their entirety, and I have used boldface type for key ideas within points.

1. **CREATE AND MAINTAIN A CONSTANCY OF PURPOSE TOWARD IMPROVEMENT** OF STUDENTS AND SERVICE. AIM TO CREATE THE BEST QUALITY STUDENTS CAPABLE OF IMPROVING ALL FORMS OF PROCESSES AND ENTERING MEANINGFUL POSITIONS IN SOCIETY.

2. **EMBRACE THE NEW PHILOSOPHY.** EDUCATIONAL MANAGEMENT MUST AWAKEN TO THE CHALLENGE, MUST LEARN THEIR RESPONSIBILITIES, AND TAKE ON LEADERSHIP FOR CHANGE.

3. **WORK TO ABOLISH GRADING AND THE HARMFUL EFFECTS OF RATING PEOPLE.** FOCUS ON THE LEARNING PROCESS, NOT THE RATING PROCESS.

4. **CEASE DEPENDENCE ON TESTING** TO ACHIEVE QUALITY. ELIMINATE THE NEED FOR INSPECTIONS ON A MASS BASIS (STANDARDIZED ACHIEVEMENT TESTS) BY PROVIDING LEARNING EXPERIENCES WHICH

CREATE QUALITY PERFORMANCE; LEARNING EXPERIENCES THAT ENCOURAGE CREATIVITY AND EXPERIMENTATION.

5. **WORK WITH THE EDUCATIONAL INSTITUTIONS FROM WHICH STUDENTS COME.** MINIMIZE TOTAL COST OF EDUCATION BY IMPROVING THE RELATIONSHIP WITH STUDENT SOURCES AND HELPING TO IMPROVE THE QUALITY OF STUDENTS COMING INTO YOUR SYSTEM.

6. **IMPROVE CONSTANTLY AND FOREVER THE SYSTEM OF STUDENT IMPROVEMENT AND SERVICE** TO IMPROVE QUALITY AND PRODUCTIVITY IN PERSONAL LIFE AND COMMUNITY.

7. **INSTITUTE CONTINUOUS TRAINING ON THE JOB** FOR STUDENTS, TEACHERS, CLASSIFIED STAFF AND ADMINISTRATORS; FOR ALL PEOPLE CONNECTED TO THE HUMAN ORGANIZATION OR COMMUNITY.

8. **INSTITUTE LEADERSHIP.** THE AIM OF SUPERVISION (LEADERSHIP) SHOULD BE TO HELP PEOPLE USE TECHNOLOGY AND MATERIALS TO DO A BETTER JOB AND SET THE PACE DRIVING HUMAN CREATIVITY.

9. **DRIVE OUT FEAR,** SO THAT EVERYONE MAY WORK EFFECTIVELY FOR THE SCHOOL SYSTEM. CREATE AN ENVIRONMENT WHICH ENCOURAGES PEOPLE TO SPEAK FREELY AND TAKE RISKS.

10. **BREAK DOWN BARRIERS BETWEEN DEPARTMENTS. PEOPLE** IN TEACHING, SPECIAL EDUCATION, ACCOUNTING, FOOD SERVICE, ADMINISTRATION, CURRICULUM DEVELOPMENT AND RESEARCH MUST WORK AS A TEAM. DEVELOP STRATEGIES FOR INCREASING THE COOPERATION AMONG GROUPS AND INDIVIDUAL PEOPLE. PLANNING TIME WILL FACILITATE THIS DYNAMIC.

11. **ELIMINATE SLOGANS, EXHORTATIONS, AND TARGETS FOR TEACHERS AND STUDENTS ASKING FOR PERFECT PERFORMANCE AND NEW LEVELS OF PRODUCTIVITY.** EXHORTATIONS CREATE ADVERSARIAL RELATIONSHIPS. THE BULK OF THE CAUSES OF LOW QUALITY AND LOW PRODUCTIVITY BELONG TO THE SYSTEM AND THUS LIE BEYOND THE CONTROL OF TEACHERS AND STUDENTS.

12. **ELIMINATE WORK STANDARDS (QUOTAS) ON TEACHERS AND STUDENTS** (E.G., RAISE TEST SCORES BY 10%; LOWER DROPOUTS BY 15%). SUBSTITUTE LEADERSHIP, THE ETERNAL DRIVE FOR QUALITY, AND JOY OF LEARNING.

13. **REMOVE BARRIERS THAT ROB THE STUDENTS, TEACHERS AND MANAGEMENT** (PRINCIPALS, SUPERINTENDENTS AND CENTRAL OFFICE SUPPORT STAFF) **OF THEIR RIGHT TO PRIDE AND JOY OF WORKMANSHIP.** THIS MEANS ABOLITION OF THE ANNUAL OR MERIT RATING AND OF MANAGEMENT BY OBJECTIVES. THE RESPONSIBILITY OF ALL EDUCATIONAL MANAGERS MUST BE CHANGED FROM QUANTITY TO QUALITY.

14. **INSTITUTE A VIGOROUS PROGRAM OF EDUCATION AND SELF-IMPROVEMENT FOR EVERYONE.**

15. **PUT EVERYBODY IN THE COMMUNITY TO WORK TO ACCOMPLISH THE TRANSFORMATION.** THE TRANSFORMATION IS EVERYBODY'S JOB.

In the nearly seven years since Mt. Edgecumbe began implementation of the TQM approach, its program has become more eclectic, incorporating elements from the work of other analysts and futurists--Myron Tribus, Joel Barker, Peter Senge, Stephen Covey, John Marsh, and others--who have focused on individual and organizational self-renewal. The continuous adaptation and use of the work of these thinkers by the staff and students at Mt. Edgecumbe has been instrumental in fueling their TQM journey.

Program Elements

Both students and teachers participate in bimonthly TQM training activities, which keeps them focused on this approach to educational improvement and ways to achieve TQM goals. This training is crucial for new students entering the system. Over the four semesters that the training activities take place, the notion of continuous improvement as an operational norm becomes internalized, and both staff and students gain skills and tools for establishing and maintaining quality classroom environments. Among the contents of these sessions are:

- The elements of a TQM approach to teaching and learning
- Key terms and operational definitions
- Developing a vision and improvement priorities

- Identifying and accessing sources of help--human and material
- Team roles in the learning environment
- Designing individual and team projects
- Group and individual decision making
- Staying focused on improvement.

Probably the most basic feature of Mt. Edgecumbe's program is the high degree of responsibility students take for managing and assessing their own learning. In keeping with the TQM philosophy, the teacher serves in a facilitator/coach/counselor capacity, assisting students to conceive projects--projects being the chief means by which students develop and demonstrate competency. Teachers help students to determine what competencies are needed, how they will be assessed, and how to work through and evaluate agreed-upon project components.

Student projects typically call for knowledge and skill from across the curriculum. A project calling for design of a spawning channel for salmon, for example, might require knowledge and skill in marine science, geography, writing, and oral communication skills, together with generic skills in research, analysis, problem solving, and defending one's ideas.

Over time, teachers and students have worked together to develop "competency matrices" for learning outcomes within each core *subject area*. Along the vertical axis of each matrix are listed the *competencies* organized by *competency categories* and by *learning outcome*. For example, within the subject area of "Alaska Issues," students must demonstrate achievement in several learning outcome areas, including "Native Issues." As part of achieving mastery in "Native Issues," they must exhibit competence within several categories, such as "Tribal Government" and "Current Issues." Within each of these categories are listed the competencies which comprise it. For example, the category "Tribal Government" includes several competencies, including "Indian Reorganization Act-history," "Sovereignty-issues," "Tribal organizations," and "Role of Tribal governments."

Along the horizontal axis of each matrix are listed the six levels of Benjamin Bloom's classic *Taxonomy of Educational Objectives*, which proceed, in increasing order of sophistication, from *knowledge* to *comprehension*, *application*, *analysis*, *synthesis*, and *evaluation/appreciation*. The primary target for all areas is application. Students receive continual training in the meaning and use of these designations. Thus, they develop facility in assessing their own learning by identifying the degree to which they grasp each competency and assigning the appropriate designation.

For example, with support from a teacher, a student might determine, at a given point in time, that her learning about tribal organizations has the following characteristics: understanding of information, ability to recognize the information in other forms, capacity to explain it to others, and to make use of it. She can give a personal or original example of how she uses this information. At this time, she has not yet learned to utilize the information in more sophisticated ways. Thus, she determines that, vis a vis this competency, her learning has proceeded through *knowledge* to *comprehension*, and that higher levels of learning this competency await her.

Class periods at Mt. Edgecumbe are 90 minutes long on most days; consequently students do not have every class every day. Staff and students agree that these generous class periods allow in-depth involvement in learning activities and greater opportunities to make progress on class and individual projects. On alternate Wednesdays (when students are not in their bimonthly TQM trainings), they have extra in-school time to work on the projects they have negotiated with their teachers.

Over time, Mt. Edgecumbe has made good on its intention to move away from the use of standardized achievement tests, giving much more prominence to assessment methods such as alumni and parent surveys and portfolios as means to assess student learning and determine program success.

Academic and interpersonal support of Mt. Edgecumbe's students is provided through the organization of staff and students into "extended families." Each staff member, including noncertified staff, participates in an "extended family" made up of his or her own

nuclear family and a small group of students. These extended family groups increase students' sense of belonging by giving them personal attention and involving them in out-of-school activities such as fishing, cards and games, picking berries, and occasional meals in the staff members' homes. A highlight of this observer's time at Mt. Edgecumbe was participation in one of the school's weekly "Family Nights," where extended family groups eat together in the school cafeteria, socializing and planning other "family" activities.

Selected Activities

Mt. Edgecumbe High School has received considerable attention nationally and even internationally, both for its implementation of the TQM philosophy and for specific successful projects that have been carried out using this approach. So numerous are the travels to and from Mt. Edgecumbe to teach and learn about the school's quality management approach that not all of them will be itemized here. Suffice it to note that, beginning in 1988, Mt. Edgecumbe administrators, teachers and students have given presentations on their quality management approach to educators and business people throughout Alaska and many of the lower-48 states, as well as traveling to Canada, England, China, Japan, and Greece. The school has received visitors from all over the U.S. as well as from European countries, Australia, and New Zealand. A few specific highlights include:

1988-89:

- The principal, the entrepreneurship teacher, and his students develop salmon products and travel to Japan and China to study Pacific Rim markets, promote products, and establish a school/business partnership.

1990:

- Myron Tribus, nationally recognized TQM expert, visits and writes about Mt. Edgecumbe High School for a national publication.
- Staff and students make presentations in Massachusetts, Wisconsin, California, Kansas, Texas, New Mexico, and Ontario.

1991:

- IBM/CCM makes the film, "Quality or Else" at Mt. Edgecumbe High School.
- Two students attend and present at a Deming conference in London, England.
- Alaska Commissioner of Education asks Mt. Edgecumbe staff and students to train 125 Alaska State DOE employees in quality processes and techniques.
- Futurist/quality consultant Joel Barker visits Mt. Edgecumbe High School, studies the curriculum, and donates a two-day workshop for faculty members.

1992:

- Arthur Anderson & Co. sends a team to study Mt. Edgecumbe High School as part of their "Schools of the Future Program," and a staff and student group train an Anderson "Future" school in Chicago.
- Alaska Governor Hickel declares Mt. Edgecumbe High School an "America 2000" school.

1993:

- A staff and student group travels to rural Alaska schools to mentor quality methods.
- Harvard University sponsors annual International Principals Conference in Sitka featuring Mt. Edgecumbe High School.

In addition to these kinds of honors and accomplishments, Mt. Edgecumbe also has to its credit many other notable achievements in its own community, for example:

- Receiving a state telecommunications grant for equipment, travel, and administration needed to make videos aimed at prevention/reduction of drug and alcohol use, teenage pregnancy, AIDS, etc.
- Designing a bicycle path system which was described in the publication, *Alaska Issues*
- Producing for the governor's office a video on Alaska's Community Development Quota which was aired on public television

- Using quality principles and business/ technology learning to help their families' small businesses (e.g., tourism and fishing) to improve their operations and become more successful

- Participating in the PBS learning course, "Strategies for Change" video series

- Participating in the Juran Institute's "The Quality Management Report" video series

- Making the school newspaper virtually self-supporting by selling advertising space to local businesses.

Practice: Quality in Action in Mt. Edgecumbe's Classes

Two days of observation and interviewing at Mt. Edgecumbe provided an informative and delightful look at quality in action. A briefing with Quality Coordinator Todd Bergman included viewing the Mt. Edgecumbe segment of a videotape titled "Native American Education: Strategies for Change." General information about the school is accompanied in this segment by many scenes of hands-on learning, whether it involves carrying out business operations in a classroom setting or wearing wet suits into a river "to experience a good spawning environment from the salmon's point of view." While cautioning viewers that "TQM is not a quick fix," the video voiceover concludes that Mt. Edgecumbe students and staff find that "creating independent, life-long learners is worth the effort."

MARINE SCIENCE

As Marty Johnson's marine science class of juniors and seniors prepared to climb aboard the bus for a field trip to the Sheldon Jackson College Fish Hatchery, Mr. Johnson oriented them to what they could expect to see and learn. "We'll follow the fish [different kinds of salmon] through their life cycle," he said, going on to reinforce the connection of this and other field trips to the students' first project--design of a natural spawning channel for salmon. Differences among the life cycles of king, coho, pink, sockeye, and chum salmon were noted, in order that the spawning channels designed by the students will be suitable for the kind of fish selected. This first project of the year is provided by Mr. Johnson to show how a project is conceived and carried out; subsequent projects will call for greater student responsibility.

The field trip route--from the bus to the fish ladders, to the tanks where the fish are stripped of sperm and eggs, to incubators, and on to tanks where the fish spend the early part of their lives--was an in-motion discussion, with Mr. Johnson speaking (shouting, actually, since the hatchery is a noisy place) and students taking notes, making drawings, and asking questions. Mr. Johnson periodically invoked terms and concepts familiar to students from their TQM trainings in order to provide ideas or strategies about how they might organize their learning and remember key ideas. Mt. Edgecumbe's marine science program is an expression of several of the school's goals: It is based upon the importance of the salmon fishing industry throughout Alaska, the fact that many students are from fishing families, and the school's focus on learning about Pacific Rim nations and their markets.

VIDEO PRODUCTION

Michelle Winger's second-year video production class provides both high school credit and University of Alaska-Southeast credit for participating students, who come from both Mt. Edgecumbe and nearby Sitka High School.

The day of the observation, students were engaged in two important discussions: determining how to spend the $50,000 telecommunications grant the program recently received from the state (referred to earlier, for making public service videos), and planning a new project--a half-hour, reading-oriented television program for small children called "The Reading Rock."

These technologically sophisticated young people and their teacher, as they held a creative session for the new program, provided a telling exhibition of the application of TQM principles to project development. They put forth ideas; gave arguments in support of their views; challenged one another and their teacher firmly but courteously; identified necessary equipment, production roles, and time requirements, and so on, For each potential new equipment acquisition, they

identified its advantages and disadvantages in relation to other possibilities.

Throughout this process, Ms. Winger occasionally raised considerations that the students had not thought of or contributed ideas for the program, but she did not take control of the process or veto any ideas. She contributed to the discussions as a knowledgeable and experienced participant. In 90 minutes, the students reached consensus for the directions of both of their projects. Perhaps equally important, their discussions were punctuated with jokes, laughter, and good-natured teasing; they were clearly having fun.

JOURNALISM

An order of business in Kathleen McCrossin's journalism class, at this early point in the school year, is for students to establish their vision for the school newspaper, the *Channel Light*. Or, more accurately, *two* visions--one for the newspaper as a product, and another for the process whereby the product is developed.

Ms. McCrossin spoke of her approach to teaching the class. "The school paper is *their* paper," she said, "and in working on it, they learn technology, business practices, teamwork, research skills, and the connection between school and the real world." Ms. McCrossin indicated that she feels fortunate to have six returning journalism students from the previous year, who can take on leadership roles, serving as editors while the new students are learning the roles needed to publish a newspaper.

Last year, noted Ms. McCrossin, her class earned $2,500 over and above expenses that the current class can use to begin this year's work. Beyond that, they will develop advertising contracts with businesses--a new idea this year--and engage in other projects to bring in revenue.

It was enlightening to watch and listen to this group of young people as they engaged in one of TQM's key processes--vision building. "What is a vision?" asked Ms. McCrossin, with students responding that a vision is "a goal," "the big picture," "idealistic," "a dream," "the best possible product or procedure." She then led a "visioning" activity, inviting students to brainstorm "characteristics of an ideal newspaper." She reminded them that "anything goes" during the brainstorming process, since the list will be refined later.

The second-year journalism students were initially more active than the new students in citing desirable attributes for the paper, but soon the newer students were contributing just as many ideas. In this way, students suggested that their ideal school newspaper should:

- Be big and thick
- Have quality stories
- Be accurate
- Be informative
- Deliver a message
- Apply principles of good design
- Be thought provoking
- Get people involved
- Reflect the characteristics and interests of the student body
- Produce excitement
- Produce satisfaction
- Be a model for others
- Be well known, famous
- Be influential
- Address all readers (not just students)
- Be positive and proactive
- Be fair and nonbiased
- Inspire
- Educate.

As this activity proceeded, Ms. McCrossin observed and encouraged students, probing and asking questions at points where the brainstorming began to slow down.

Next, one of the student editors very capably led an activity aimed at brainstorming components of a vision for the process of creating the school newspaper. This was followed by a division of the class into two groups, each one further dividing itself into the quality management roles of recorder, contributor, leader, and encourager. With each group focusing on one of the two parts of the vision, they worked with the brainstormed lists, clustering like things, eliminating repetitions, rank ordering items and, finally, drafting a vision statement. They then shared these drafts with one another, trading comments and editing suggestions, and agreed to finalize the statement during their next class period.

Ms. McCrossin did not find it necessary to be directive with students at any point in the process; rather, she functioned as an encourager and occasional critic, helping students to stay focused on key ideas and come up with appropriate wording.

Evaluating Mt. Edgecumbe's Program: The Views of Students and Parents

Staff and student self-assessments of student projects/products show a trend toward broader understanding and more sophisticated expression of learning material. More prosaic measures, such as SRA exam results, reveal a modest but steady increase in student achievement over the nearly seven years of application of TQM principles in the school's educational program. Other positive indicators are the low dropout rate, high attendance rate, more than twice as many enrollment applications as openings, and the fact that nearly all recent graduates went on to college (68 percent) or technical/trade school or military service (18 percent).

Perhaps most telling, however, are the ratings the school has received from its primary "customers"--its students. Findings from an externally conducted 1993 graduate survey are highlighted below:

- Seventy-three percent indicated that Mt. Edgecumbe high school did a good or very good job preparing them to continue their education.
- Ninety-seven percent stated that the quality of education they received was better than what they would have received in their home communities.
- Seventy-three percent would like to have their own children attend Mt. Edgecumbe.
- Ratings of the quality of courses taken ranged from 4.1 (mathematics) to 4.7 (computer science) on a 5-point scale.

Upcoming: Hosting a National Conference

During this writer's visit, many staff and students spoke of the upcoming "Edgecumbe '95," a national conference on quality in education and learning, which will take place in April 1995. Quality management experts, futurists, business people, educators and others will participate in workshops conducted by (some) staff and (predominantly) students. TQM concepts, descriptions of successful projects, guidelines for those wishing to set up their own quality management programs, and other topics will be addressed. Development of workshop content and promotional materials for this large-scale event was well underway at the time of the observer's visit.

Mt. Edgecumbe High School has been overwhelmed in recent years by calls and visitation requests, and schedules have consequently been established to accommodate this high level of interest. Current visitation and conference information is available by calling the school at 907/966-2201 or FAXing a request to 907/966-2442. For an "Educator's Sample Packet" of materials describing Mt. Edgecumbe's program, send a $15.00 check or money order payable to "Edgecumbe Quality Team" and addressed to Edgecumbe Quality Team, Mt. Edgecumbe High School, 1330 Seward Avenue, Sitka, Alaska 99835.

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SCHOOL IMPROVEMENT RESEARCH SERIES
"Research You Can Use"

Snapshot #36

Preparing High School Students for the World of Work in a Tech Prep Program

St. Mary's County Public Schools Leonardtown, Maryland

Joan M. Shaughnessy

Research Findings

In St. Mary's County Public Schools, headquartered in Leonardtown, Maryland, students prepare for the educational and employment opportunities of the 21st century by experiencing a genuine integration of traditional academic and vocational programming. Research findings congruent with the approach St. Mary's has taken include the following, excerpted from the Northwest Regional Educational Laboratory's *Effective Schooling Practices: A Research Synthesis / 1990 Update*.

At the *classroom* level:

1.1.1 Instruction is Guided by a Preplanned Curriculum

a. Learning goals and objectives are developed and prioritized according to district and building guidelines, selected or approved by teachers, sequenced to facilitate student learning, and organized or grouped into units or lessons.

1.2.2 Classroom Learning Time is Used Effectively

c. Teachers set and maintain a brisk pace for instruction that remains consistent with thorough learning. New objectives are introduced as quickly as possible; clear start and stop cues help pace lessons according to specific time targets.

1.4.3 Personal Interactions Between Teachers and Students are Positive

d. Students are allowed and encouraged to develop a sense of responsibility and self reliance.

At the *school* level:

2.1.1 Everyone Emphasizes the Importance of Learning

a. All staff have high expectations for student achievement. Expectations are for all students; all students are expected to work hard toward the attainment of priority learning goals.

2.1.2 The Curriculum is Based on Clear Goals and Objectives

c. Collaborative curriculum planning and decision making are typical. Special attention is focused on building continuity across grade levels and courses; teachers know where they fit in the curriculum.

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School, Community and Professional Development Program

d. Staff, students and the community know the scope of the curriculum and the priorities within it.

2.3.1 Strong Leadership Guides the Instructional Program

c. The leader has a clear understanding of the school's mission and is able to state it in direct, concrete terms. Instructional focus is established that unifies staff.

j. Instructional leaders check student progress frequently, relying on explicit performance data. Results are made visible; progress standards are set and used as points of comparison; discrepancies are used to stimulate action.

p. Leaders express an expectation and strong desire that instructional programs improve over time. Improvement strategies are organized and systematic; they are given high priority and visibility; implementation of new practices is carefully monitored; staff development is supported.

2.3.3 Staff Engage in Ongoing Professional Development and Collegial Learning Activities

At the *district* level:

3.2.1 Curriculum Planning Ensures Continuity

f. Districtwide curriculum alignment and review efforts are conducted to insure high quality of instruction and consistency across schools.

Situation

St. Mary's County Public Schools serve students in rural southern Maryland. The population in this area has been growing steadily as the county's economic foundation expands beyond its agricultural base. New opportunities become available as the local Navy facility increasingly employs civilian researchers. In recent years, suburban development has been a factor in population growth, as the outlying areas of both Baltimore and the District of Columbia have begun to encroach on the perimeters of this rural area.

The majority of the population in the county is white. Approximately 88 percent of the high school students are white, and 10 percent are African-American. The remaining 2 percent are predominantly from the Hispanic community. Less than 9 percent of the students qualify for the free or reduced lunch program.

Prior to 1990, the three secondary schools in the county were structured as comprehensive high schools, each providing course offerings targeted for college preparation and, in addition, a path of loosely defined general courses available for all other students. These general courses were not geared toward developing any specific capability. The new Tech Prep program changes this by equipping high school graduates with both technical and academic skills needed in our changing global economy.

Context

In 1987, the school district began to hear complaints from local employers about poorly qualified workers. Business owners said that high school graduates had poor work habits and were ineffectual problem solvers. In a review of the high school curriculum, the district leaders noted that content related to the world of work was nearly absent from the school's curriculum. They also found that the number of high school courses offered had been expanding, but that the expectations for student achievement in these courses were vague or poorly defined.

These concerns motivated St. Mary's County to apply to the Southern Regional Education Board to become a pilot site for school change. The district became one of 28 sites funded in the 1987-88 school year. Work completed at this time led district personnel to hold the view that it is demeaning to students to graduate them from high school without direction, focus, or workforce skills. St. Mary's County began to design their high school courses to teach skills relevant to future job markets. In these courses, staff developed and implemented strategies to help the neglected majority of students--those who are not college bound--make effective career

connections. To minimize a "shopping mall" mentality, the district reduced the number of elective courses, keeping only those that were challenging, focused, and directly relevant to students' career plans. By combining high expectations with clear goals, the vocational program was reconfigured to emphasize job-related skills.

This revamping of the high school curriculum was based on findings from two lines of research. One reveals that half of today's students are kinesthetic learners--those who learn best through movement and physical involvement with learning materials. Another body of research argues that successful program changes are founded upon extensive involvement of staff. Thus, district leaders began to enlist the support of all staff, calling upon teachers to raise expectations and revise coursework to include hands-on experiences in technology. District and building administrators began to stress the importance--and raise the status--of job preparation. They emphasized that the schools' vocational program was an integral and valued part of the overall school program. Administrators demonstrated their support by incorporating the most up-to-date technology available into the program.

Program designers also recognized the need to ensure that change was economically and logistically feasible. The modifications made in this district have been completed with local funding and with no significant increase in personnel. The schools operate on a budget that is comparable to that of many high schools. The current teacher/pupil ratio in the high schools is 1:21, and the average class size is 25. High school staff teach six periods a day.

Components of St. Mary's Tech Prep Program

The Tech Prep program developed in St. Mary's County focuses students' attention on their future employment choices by engaging them in a variety of career-related experiences throughout their school years. Students are guided through an extended career orientation experience beginning in the elementary school and intensifying during their middle school years. Then, students' experiences in high school courses concentrate on skills needed by workers in the 21st century.

GUIDANCE IN THE ELEMENTARY AND MIDDLE GRADES

Career awareness is emphasized in the elementary grades and is followed by a career exploration program at the middle school level. Starting in the sixth grade, student aptitudes, interests and abilities are assessed; and this information is used aggressively in personalized counseling.

In the middle school years, the district creates individual folders for each student with all the data related to career selection. In addition, job shadowing and research projects are required to help students set their goals. All eighth graders take the Differential Aptitude Test in September. When these results are returned, individual career counseling with each student is used to explain the results and plan course registration in ninth grade.

OVERVIEW OF THE HIGH SCHOOL PROGRAM

Once students are in high school, counselors reiterate career themes in their mandatory semi-annual contacts with ninth grade students. Students self-assess their skills with two instruments: the Job OA and the Harrington-O'Shea for Career Decision Making. Orientations to the Technical Center maintained by the county are provided for ninth and tenth graders.

High school students are required to select one of four career cluster options:

- Applied Business/Management Technologies
- Applied Engineering/Mechanical Technologies
- Applied Health/Human Services Technologies
- Four-Year College Preparation.

All incoming ninth grade students--including those who are college bound--are required to enroll in a course that introduces them to technologies in one career cluster. These courses are structured around short but intensive modules and are designed to engage students by offering hands-on experiences in a wide array of topical areas. College-bound

students, along with the rest of the student body, pick from one of the three areas below.

Modules in the **Business/Management** cluster for ninth graders include:

- Computer-Aided Drafting
- Electronic Publishing
- Problem Solving/Human Relations
- Automated Accounting
- Free Enterprise/Entrepreneurship
- Marketing

In the **Engineering/Mechanical** cluster, some of the modules are:

- Biotechnology
- Medical Technology
- Bridge Construction
- Residential Wiring
- Hydraulic Systems
- Solar Power
- Laser and Fiber Optics
- Architectural Drawing
- Robotics
- Aeronautics

Those ninth graders choosing the **Health/ Human Services** cluster are oriented to such areas as:

- Biotechnology
- Environmental Water Management
- Horticulture
- Agriscience
- Computer-Aided Design/Interior Design
- Food and Nutrition
- Textiles

For all students, technology training and career focus are integral parts of their school experience. While half of the students in high school enroll in the College Preparation courses, the other half now have a specific job-related purpose for high school.

ROLE CHANGES FOR TEACHERS

The redesign of the high school required cooperation from vocational and academic teachers and from counselors. Much of the work depended upon the vocational teachers. These teachers were motivated to make dramatic changes in course content and instructional strategies because, prior to Tech Prep, declining enrollment in vocational education meant that they had to market their own courses to maintain their jobs. Moving to a Tech Prep approach provided a new role for vocational teachers, i.e., it enabled them to become leaders of change rather than reactors.

The district started its redesign with two curriculum development workshops for all teachers during the summer months. In year one, the major impetus was to link math teachers and vocational teachers by giving them personal contact with one another. Once the teachers knew each other's names and faces, they learned more about each other's jobs by trading places in the classroom. A vocational teacher came into geometry classes and taught a unit on the area of solids. A geometry teacher went to a carpentry class and taught the math formulas for elliptical arches. Teachers who participated in the job trade say this experience "opened their eyes" to new ways of teaching and to a better appreciation of the work of their colleagues in other departments. Teachers established ongoing collaborative relationships based on these early experiences of "walking in each other's shoes."

Cross-department connections have become the driving focus in curriculum development. Vocational and academic teachers have worked cooperatively to create instructional strategies that engage students with technology in the classroom. Their success is readily apparent in the ninth grade laboratory courses that orient students to the world of technology. Working cooperatively continues to challenge teachers to improve their initial efforts. The first version of the modules used in the ninth grade laboratory courses was created by the teachers during the summer, but the development process is ongoing as teachers locate new materials or see a need for modifications.

The career preparation theme continues to be supported by all teachers, academic and vocational. Teachers have modified the curriculum to link the academic content in their courses to real-world application. All teachers have added units to their classes to make student experiences more contextual and to insure that the curriculum includes "problem-rich" activities.

Training continues to be provided each summer. In August 1994, four-day institutes were

offered on two separate topics: "Teaching Through the Learning Channels" and "Teaching Tomorrow's Work Force." The first of these provides a more comprehensive understanding of sensory preferences for learning and guides lesson plan revision so teachers include more concrete teaching strategies. The second institute prepared teachers to manage classroom experiences so students learn both academic and interpersonal skills in the same lessons.

These large-scale changes are based upon trust in teachers' abilities. The district also provides opportunities for teachers to gauge their own growth and conduct their own self-evaluations.

CHANGES IN COURSE CONTENT

Curriculum integration has been focused on real work situations. In English classes, for example, applied communications have been integrated into literature study. Ninth graders learn how to follow the type of directions used in a job setting. Eleventh graders study techniques of persuasion and advertising and look for examples in their day-to-day experiences. Discussions can center on the influence of printed materials with references to diverse sources. Anything from Revolutionary War literature to Channel One broadcasts may be included. To connect literature study to the more "applied" components of the curriculum, readings are often integrated with other courses students are taking. For example, English students read *Lord of the Flies* at the same time they were studying the functions of governmental rules. Teachers of both courses prompted students to connect the concepts with their discussions.

Course content has also become more challenging as summer workshops prepare teachers to incorporate skill building in higher-level critical thinking and problem solving into all curricular areas.

TECHNOLOGY SKILLS

Staff who teach the ninth graders stress the importance of providing students with an overview on the development of technology. Teachers see the importance of making their whole course consistent with the philosophy of hands-on experiences. Teachers avoid lectures to deliver content; instead they develop experiments or simulations for students. Classroom activities demonstrate the impact of technology in our society.

Success in lab activities depends heavily upon the kind of skills that high school students bring with them. Teachers say that having keyboarding skills, for example, makes it much easier for students to interface with computers. Students also need inquiring minds and a willingness to try new experiences. Ideally, students need to be prepared for this curriculum in their middle school experience.

CONNECTION TO STATE REQUIREMENTS

State mandates have been the impetus for developing some aspects of the program. In St. Mary's County, the district doesn't aim for mere compliance, but takes these mandates as new opportunities. For example, Maryland now requires that all high school students complete 75 hours of community service. The state also requires students to pass minimum competency exams called the Maryland Functional Tests. The district has taken advantage of these circumstances by allowing students with high scores on the Functional Tests to fulfill their requirement for community service by tutoring those students who have not been successful in their first attempt at the tests.

FORMATION OF REGIONAL PARTNERSHIPS

Beginning in 1989, St. Mary's County established cooperation with two neighboring counties. Together, these three counties have forged a combined mission and have fleshed out the specifics for the three career cluster areas. Their collaborative work was formalized in an agreement between the three counties and the regional community college. All of these agencies have agreed to provide resources to deliver advanced school-to-work training to students. The regional Technical Center stands as a testimonial to their combined commitment to the Tech Prep concept.

CONTACT WITH LOCAL BUSINESSES

A first step in community involvement is the formation of strong partnerships with local

businesses; these provide apprenticeships for students. The St. Mary's district has fostered this cooperation via the Business Education Community Alliance (BECA), a community-based alliance which promotes career connections by arranging for job shadowing, teacher mentoring and employer surveys of business needs. This group has sponsored the study of job functions and technical specifications for regional jobs, so that curriculum developers can match course expectations to job specifications. Schools also invite 40 business people to an annual luncheon and ask these potential employers to provide targeted feedback about the students entering the workforce.

Teachers themselves have been identifying and summarizing national and regional business trends so they can tap into this information when they do their curriculum development work. For example, the assessment of regional needs demonstrated that there was no computer repair business operating in the area. A group of alert electronics teachers noted this lack, and as part of a project for an electronics class, have established a PC repair company. Now, with the help of the Technical Center, students are being trained to meet an immediate community need, while they benefit from on-the-job training and a supplemental income.

To maximize the compatibility of the Tech Prep classes with real-life work contexts, the program administrators have created many opportunities for teachers to interface with businesses and other employers to learn about the demands of the workplace. During the summer, 43 of the district's teachers worked in local businesses for two weeks. Teachers use this experience to develop and modify their curriculum. The district also has agreements with over 140 local businesses for a job-shadowing program.

Tech Prep in Practice

Halfway through the school year, the ninth grade students in the Applied Engineering course are re-examining their career goals. Using the Vision Plus computer program, students have prioritized their job expectations. The program probes students with a series of queries, e.g., what is the most important consideration when you select a career? Students are asked if they are seeking a position with consistent hours, minimal on-the-job pressure, frequent travel, or a specific salary level. Students respond to each question posed by the computer. Once students make their personal choices, the computer program searches its data banks and lists promising job options that match the student's profile. The program provides information about wages in this particular field and outlines career paths possible within chosen industries.

Down the hall, in the Applied Health lab, other ninth graders are busy working on one of this course's fourteen modules. In this class, the teacher acts as coach and facilitator, and students take responsibility for their own learning. As each group tackles their "work" assignments, the teacher floats from station to station, supervising and answering questions. The modules are structured so that students spend two weeks or ten class periods on each assignment; then they rotate to tackle another of the topics. Student work is self-paced, and instructions for completing the module are usually self-explanatory.

At the environmental waste management work station, three girls are watching a six-minute videotape in which Walter Cronkite is explaining the hydrologic cycle. After the video ends, students work together to answer questions about the cycle in their notebooks. At another work station across the room, two students role play entrepreneurs experimenting with desktop publishing. During the class period, they create a flyer announcing the opening of their new business.

The modules themselves lead students through new content in a personalized way. In addition to providing students with information, modules often require that students apply their learning in specific activities.

Most students seem to be able to pace their work so that they can complete the modules in ten 45-minute class periods. However, if students need assistance working through a unit, they flick on a light at their work station, signaling their teacher to come to their station without disturbing other students.

Results: Changes in Perceptions of Vocational Courses and Increased Student Performance

As part of the Tech Prep program, all students in the school learn about the importance of technology. Technology is portrayed as both a tool to enhance the learning process and a skill required of all who will live in the 21st century. Emphasizing technology in all courses means that the general perception of vocational education is being modified. The status of technology-related coursework has been raised, because of the new emphasis on job preparation. As a result, enrollment in upper-division courses has increased.

One expected outcome for this program is to increase student achievement, and the data collected indicate that there have been positive ramifications.

Here in St. Mary's County, the average score on the math portion of the Scholastic Aptitude Test (SAT) has increased 50 points during the last four years. Student scores on the Maryland Functional Tests in reading, writing and citizenship are at their highest levels, and a great many more students pass these tests on their initial try. For example, in the 1990-91 school year, 64 percent of the first-time mathematics test takers and 74 percent of the first-time writing test takers passed the state's functional tests. In the 1993-94 school year, 90 percent passed the math test, and 95.7 percent passed the writing test on their first attempt.

Since the inception of the Tech Prep program, the number of students completing more rigorous courses (such as advanced placement sections, upper-level mathematics or science courses, and foreign languages) has also increased. In 1990, approximately 30 percent of the high school graduates were meeting state standards for either the college or the occupational program. In 1993, the students designated as "program completers" had increased to 66 percent. The district aims to improve upon this; its goal is to ensure that 90 to 95 percent of all students in the Class of '95 meet these standards.

Behavioral data also indicate that students are rising to the challenges of the new program. Currently, the average daily attendance at the high schools is 93.6 percent; this is the highest in their history. The student dropout rate has declined a phenomenal 300 percent, from 8 percent to 1.9 percent. In addition, the number of discipline referrals has been cut in half.

Data gathered also show that the community is taking a more active role in their schools now. Throughout the county, the number of hours volunteers have spent in the schools almost doubled in a three-year period, from 33,000 in the 1989-90 school year to over 60,000 in 1992-93.

Each year the program has continued to explore new ways to make the high school years more successful and more focused for the students in this county. More information on the St. Mary's County program is available from Stephen G. Olczak, Career and Technology Education, St. Mary's County Technical Center, Route 1, Box 49-2, Leonardtown, Maryland 20650, (301) 475-5501.

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