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ABSTRACT

The analysis of proposed or implemented programs for increasing the achievement of at-risk students in all grades is the purpose of this report. Its focus is on identifying effective organizational responses, programs, and practices that improve the achievement of all at-risk children. Schools currently respond to poor academic performance with three organizational approaches: grade retention; ability grouping and tracking; and special education. The ways in which these practices and effective programs affect student achievement are analyzed. Two separate chapters analyze and offer recommendations for the elementary and secondary grades, respectively. Implications of this study point to the need for early intervention programs, experimentation with alternative programs, government support at all levels, and serious commitment of state and local educational agencies. An extensive bibliography and list of effective programs for students at risk are included. (LMI)

POLICY PERSPECTIVES

Increasing Achievement of At-Risk Students at Each Grade Level

Information Services
Office of Educational Research and Improvement
U.S. Department of Education

POLICY PERSPECTIVES

Increasing Achievement of At-Risk Students at Each Grade Level

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Policy Perspectives Series

Workplace Competencies: The Need to Improve Literacy and Employment Readiness

Excellence in Early Childhood Education: Defining Characteristics and Next-Decade Strategies

Increasing Achievement of At-Risk Students at Each Grade Level

Accountability: Implications for State and Local Policymakers

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Foreword

At all levels of government, education policymakers are confronting immense problems that cry out urgently for solutions. These men and women—legislators, governors, mayors, school officials, and even the President of the United States—generally agree that our schools cannot be left to operate unaltered, and that the need for reform is widespread and immediate.

Policymakers know, for example, that the growing demand for early education is forcing a crisis in that field and that educators of young children now grapple with demands that are straining their resources and compelling them to redefine their mission. They listen as employers loudly lament the quality of high school graduates, while investing millions of corporate dollars in programs that teach basic skills and workplace competencies to their newest workers. And they search diligently for programs and practices that can reverse our alarming failure to bolster the achievement levels of at-risk students.

But if the problems are numerous and compelling, there is no shortage of proposed solutions. Currently, one of the most favored reform strategies calls for implementing accountability measures that would more clearly define and assess who is responsible for student success and student failure. Thus, while the number of programs, suggestions, proposals, and techniques for dealing with such specific issues as literacy or achievement levels among at-risk youngsters is mind-boggling, many of these approaches now contain one or more strategies for holding schools accountable for student learning.

Given the intensity of the school reform debate and the abundance of ideas for remedying the Nation's educational ills, it is not surprising that many policymakers often find themselves adrift in a sea of uncollated and frequently conflicting information that does little to inform decision-making.

In an effort to alleviate this situation and to inform the education debate, the Office of Educational Research and Improvement (OERI) decided last year to commission a series of papers to address those topics that policymakers themselves told us were most pressing.

We began by surveying the major policymaking organizations and asking them to identify which school-related issues they viewed as compelling. There was remarkable agreement in the field, and it did not take very long to identify those areas most in need of illumination. We learned, for example, that policymakers are concerned about improving literacy levels and about graduating young people who are prepared to function effectively in the modern workplace. We discovered that they are seeking strategies to combat the growing crisis in early childhood education and to raise achievement levels among at-risk students. And we found that there is a genuine need to clarify the issues surrounding educational accountability, so that intelligent decisions can be made about how best to hold schools answerable for their performance.

Thus advised, we sought the most distinguished scholars we could find to address significant aspects of these issues, and we succeeded in assembling a roster of individuals whose expertise on these subjects is unchallengeable. Indeed, I am most grateful to James M. McPartland, co-director of the Center for Research on Elementary and Middle Schools, Johns Hopkins University, and Robert E. Slavin, director of the Elementary School Program for the Center for Research on Elementary and Middle Schools, and co-director of the Early and Elementary School Program of the Center for Research on Effective Schooling of Disadvantaged Students, Johns Hopkins University, for their thoughtful and provocative analysis of strategies for raising achievement levels among all at-risk students.

I am also indebted to:

- Paul E. Barton, director of the Educational Testing Service's (ETS) Policy Information Center, and Irwin S. Kirsch, research director for ETS' Division of Cognitive and Assessment Research, for their paper on *Workplace Competencies: The Need to Improve Literacy and Employment Readiness;*
- Sharon L. Kagan, associate director of The Bush Center in Child Development and Social Policy at Yale University, for her paper on *Excellence in Early Childhood Education: Defining Characteristics and Next-Decade Strategies;* and
- Michael W. Kirst, professor of education and business administration at Stanford University, for his paper on *Accountability: Implications for State and Local Policymakers.*

We asked that all the authors approach the subjects within a common framework and bring to bear their distinctive perspectives on these important issues. Specifically, we requested that they do four things:

- Describe the issue or problem being addressed;
- Discuss briefly pertinent research on the topic;
- Describe what States and/or other concerned interest groups are doing about the issue, and
- Analyze the implications of current activity—and inactivity—for policymakers at the Federal, State, and/or local levels.

Then, to ensure that this paper—and the others in this "Policy Perspectives" series—would, in fact, be valuable to the community of policymakers, we invited all of the scholars to participate in a one-day meeting where they could present their draft findings at a public forum and then engage in small group discussions that provided a unique opportunity for face-to-face peer review sessions. Both authors and reviewers were overwhelmingly enthusiastic about this process, and all of the papers were revised to reflect the feedback offered.

I want to stress, in conclusion, that it is *not* the purpose of this series to supply easy answers or quick-fix solutions to the complex problems confronting American education today. We did not start out to develop a set of blueprints with step-by-step instructions for implementing reform. Rather, we are seeking to promote the dissemination of knowledge in a format we hope will provide policymakers everywhere with new insights and fresh ideas that will inform their decision-making and translate into strategies that will revitalize the ways in which we run our schools and teach our students.

Christopher T. Cross
Assistant Secretary
Office of Educational Research
and Improvement

Acknowledgments

Information Services' "Policy Perspectives" series is one response to OERI's Congressionally mandated mission to "improve the dissemination and application of knowledge, obtained through educational research and data gathering, particularly to education professionals and policymakers." To launch the series, we invited some of the Nation's most renowned scholars to produce papers addressing those issues that policymakers told us were most pressing. This report is but one by-product of the undertaking.

Many people contributed to the success of this project. I would especially like to thank James McPartland and Robert Slavin of the Center for Research on Elementary and Middle Schools at Johns Hopkins University for consenting to produce this paper *Increasing Achievement of At-Risk Students at Each Grade Level*. I am also grateful to those members of the policymaking community who agreed to review and comment on an early draft of this document. They are: Denise Alston, Children's Defense Fund; Jerilyn Andrews, Montgomery County, MD, Public Schools; Edward Gickling, Council for Exceptional Children; John Kyle, National League of Cities; Val Plisko, U.S. Department of Education; and Robert Silvanik of the National Governors' Association.

I am grateful to all of you.

Sharon Kinney Horn
Director
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Introduction

American schools are failing to educate an alarming number of students. In many large urban districts, for example, more than half of the students drop out before completing high school. And although some later finish their schooling, many of these individuals fail to acquire the minimum levels of competence in basic academic skills that most jobs require. Not surprisingly, awareness of these problems is widespread, and professional educators and business and political leaders search diligently for solutions.

This paper examines the status of currently proposed or implemented school programs aimed at increasing achievement of at-risk students in the elementary, middle, and high school grades. We review and assess solutions designed to change organizational, instructional, and curricular practices and resources. Thus, our specific focus is on identifying effective organizational responses, programs, and practices that improve the achievement of all at-risk children.

Ultimately, American education will do a better job in serving these students only when more effective ways of delivering high-quality instruction are instituted in the Nation's schools and classrooms. But improved instructional delivery must occur in the framework of effective organizational responses to the low achievement of at-risk students. Currently, schools primarily respond to these youngsters' poor academic performance with three organizational approaches: retention in grade, ability grouping and tracking, and special education. This review first examines how these structures put up barriers to improving the achievement of at-risk students. It then analyzes how effective programs at the elementary, middle, and high school levels remove these barriers or function within them to improve achievement and prevent dropout.

For two reasons, our review looks separately at the elementary grades and at the middle and high school grades. First, the amount of knowledge about effective practices and the level of supplementary investments for at-risk students at the separate grade levels is unequal; a great deal more research has been conducted on effective organizational and instructional practice at the elementary level than at the higher grades. Second, the issue of student dropout becomes more dominant at the middle and high

school levels, even though the seeds of dropout may have been planted in the elementary years.

Current School Organizational Responses to Improving the Achievement of At-Risk Students

Three major ways that schools at all levels presently respond to low-achieving students are retention, tracking, and special education placements. Each of these approaches, implemented at a few disparate decision points, has far-reaching ramifications on the timeliness and effectiveness of the help offered to at-risk students.

Retention

Retention is the practice of requiring some students to repeat a grade when they have not achieved the minimum levels of academic competencies expected at a particular stage in schooling. Generally, retention policies are instituted to maintain minimum standards of school progress and to avoid automatic "social promotions" that can result in high school graduates who have not learned the basic academic skills. Yet while this practice can not usually be defended as a timely or effective response to improving the achievement of at-risk students, many urban school systems routinely hold back 15 or 20 percent of students at each grade level, and by grade 10, up to 60 percent of students in these schools have been retained at least once (Gottfredson, 1988).

Indeed, research evaluations of typical retention practices have not shown any consistent learning benefits over the length of a retained student's school career, as compared to age-mates with similar academic records who were not held back (Shepard and Smith, 1989; Jackson, 1975). And conversely, there is strong evidence that being held back significantly increases the probability that an individual will drop out before high school graduation (Natriello, McDill, and Pallas, 1990).

Still, some retention policies do attempt to help improve at-risk students' achievement in a timely and effective way. Very young children, for example, may not be so sensitive as older children to the stigma of grade retention, and some educators recommend holding back low-achieving students in the earliest elementary grades. Other proposals suggest making retention decisions only at a couple of key transition points over

the 12 grades of schooling, such as between elementary and middle grades and between middle and high school grades, while providing special high quality programs for all students who are held back at these points.

Tracking

Within each grade level, schools often deal with the issue of students' academic diversity by separating them into different classrooms on the basis of their previous grades, tests, or teacher evaluations. Generally referred to as tracking, this practice in some form is almost universal in American high schools, and it is increasingly prominent in the Nation's middle and elementary schools (Braddock, 1990).

At the elementary level, grouping is often accomplished *within* a heterogeneous class by forming smaller subgroups for instruction, such as the three reading "ability groups" that exist in most early elementary classes. In middle and high schools, homogeneous groups typically are formed between classes (rather than within them) when classroom assignments are based on students' recent test performance or report card grades. Indeed, high school students are often assigned first to differentiated curriculum programs—such as academic or college prep, general, and vocational—and then, based on further assessments of differences in needs and abilities, to separate classes within these programs.

In theory, tracking is used to accommodate instruction and curriculum to the diverse student needs, interests, and abilities found in most schools. Since the theory supposes that students will learn best when instructional content and practice are well matched to individual knowledge and abilities, students are thus divided into homogeneous learning groups. Within these groups, teachers can offer instruction and curriculum that no student finds too hard or too easy, and so theoretically they can maximize motivation and learning.

The research on the effects of tracking indicates, however, that this practice produces unequal educational opportunities by distributing formal and informal educational resources unevenly among students. Thus, separately tracked classes receive dissimilar shares of the key formal and informal aspects of a good learning environment. For example, the least experienced teachers are usually assigned to lower classroom tracks, even though they enroll the students with the greatest needs who may be the most challenging to teach.

Still, the most serious resource allocation problem is the informal classroom climate, especially in terms of expectations for achievement. Numerous case studies show that the lower track classes are often stigmatized by a general feeling that their students are not capable learners and are unable to master the same kinds of skills demanded of other classes. When both teachers and students share such negative images, certain instructional consequences follow: a less challenging curriculum is offered; fewer curriculum units are covered; the instructional pace is slower; fewer demands are made for learning higher order skills; and test and homework requirements are taken less seriously (Oakes, 1985; Mitchell, 1989).

Over time, tracking may also have a cumulative effect that actually widens the achievement gap between students in the top and bottom levels (Goodlad, 1983). Because the learning environments are weaker in the lower tracks, a student who is first assigned to a bottom class has an even poorer chance of moving to a higher one at the next grade level. Indeed, tracking generally produces slower and slower learning rates for those at the bottom as well as increasingly remote prospects of their receiving improved track assignments. Accordingly, the cumulative effects are greatest when this process starts in the early elementary grades.

Tracking can also undermine school desegregation efforts, because students from poorer socioeconomic backgrounds are most likely to wind up in lower tracks (Epstein, 1985). Thus, in racially mixed schools, tracking usually resegregates black and white students into different classes and reduces minority students' opportunities to complete high school and enter college.

Consequently, while tracking is an organizational response by schools and districts that is meant to address the instructional needs of low-achieving, at-risk students, it functions instead in ways that are detrimental to these students' achievement.

Special Education Placements

In contrast to most retention and tracking practices, special education programs usually do offer greater resources to the students they serve. Services range from special schools to special classes within schools and various part-time arrangements, and they often involve small-group instruction by teachers trained and certified for special education. Over the past 15 years, however, schools have frequently used special education designations to obtain extra resources for low-achieving students with no other major handicaps. During this period, the number of children classi-

fied as learning disabled (LD) for placement in special education programs has doubled, even though the numbers of students classified with physical disabilities or mental retardation in special education have not substantially changed. Indeed, studies of LD students reveal that they are usually the lowest of the low achievers, with no other distinctive characteristics (Deshler, et al., 1982).

Serious problems occur when the LD designation and its very expensive special education services are used to react to the low achievement of at-risk students. For example, the education resources available for those low-achieving students who are not admitted to special education programs may actually decrease, due to the high costs of individual assessments and because local matching funds for special education participants must be deducted from district money that would normally be available for other uses. And even those young people who do receive the costly special education services via the LD designation may not benefit, since research fails to document any sizeable improvements in learning outcomes for these students (Leinhardt and Pallas, 1982; Madden and Slavin, 1983). Moreover, individuals designated for special education usually remain in that status throughout their school tenure, and this, in turn, severely limits their future educational and occupational opportunities.

Thus, special education placement is often a dramatic one-time response to low achievement that has major continuing consequences on how educational resources are allocated to meet the variety of student needs in a district.

Increasing Achievement of At-Risk Students in the Elementary Grades

Success in the early elementary years is a critical prerequisite for success in later schooling and, ultimately, in life. Indeed, several studies show that as early as the third grade, we can identify with remarkable accuracy those students who will fail to complete their education (e.g., Howard and Anderson, 1978; Lloyd, 1978; Kelly, Veldman, and McGuire, 1964). Third-graders who are reading a year or more below grade level or have been retained one or more times are particularly at risk, and when these students are from low socioeconomic backgrounds and attend school with many other poor children, their chances of eventually graduating from high school approach zero.

Against this depressing and often told story is mounting evidence that *almost every child can be successfully taught to read in the early grades,* and the same is almost certainly true of other basic skills. This section, therefore, reviews research on effective programs for students at risk of school failure, proposes general principles drawn from this review, and describes a particular program, Success for All, which is currently applying these principles in inner-city Baltimore and Philadelphia schools. The findings of this research make unmistakably clear that we already know how to do a much better job with these students, and that we are approaching a time when proven, replicable, and practical schoolwide programs will be available that can guarantee the success of virtually every child in the early grades.

We reviewed research on every imaginable approach designed to increase student reading and mathematics achievement in the elementary grades (see Slavin, Karweit, and Madden, 1989; Slavin, 1987). In addition, we examined published literature, technical reports, government reports, and other sources in search of programs that met a stringent set of criteria. Effective programs fell into three broad categories: *prevention, classroom change,* and *remediation.*

Prevention

Obviously, the easiest learning deficits to remedy are those that never occur in the first place. Given the limited capacity of Chapter 1* and special education programs to bring students up to adequate performance levels, recent strategies have increasingly focused on providing intensive services in the early grades, so that the need for remedial services is reduced or eliminated later on. Typically, prevention programs focus on preschool, kindergarten, or first grade.

Preschool. One of the most widely discussed preventative strategies has been to provide preschool education to 4-year-olds, particularly those from disadvantaged homes. The idea that good quality preschool programs could give disadvantaged students a leg up in their education was an important piece of Lyndon Johnson's War on Poverty in the 1960s, and it led to creation of the Federal Head Start program as well as other preschool initiatives. Still, research on preschool has found that while there are strong effects on the language and IQ scores of disadvantaged children immediately after the preschool experience, these effects diminish each subsequent year until they are undetectable by the second or third grade (see Karweit, 1989a; McKey, Condelli, Ganson, Barrett, McConkey, and Plantz, 1985). Now, however, students involved in many of the early preschool studies are in their twenties, and longitudinal data, obtained by following participants for many years, have begun to show that preschool does have positive effects on such outcomes as high school graduation and delinquency (Berrueta-Clement, Schweinhart, Barnett, Epstein, and Weikart, 1984).

These long-term effects of preschool are somewhat difficult to explain, however, since no achievement effects are detected for many years before graduation or dropping out occurs. In addition, the longitudinal studies, while well designed, involve small groups of children who receive extraordinarily intensive (and expensive) preschool experiences. So while preschool may well have long-term effects, the well-documented, short-term effects on both achievement and special education referrals in the early grades are perhaps more important. In short, preschool may be seen as an effective means for getting students off to a good start in school, but it should not be viewed as a solitary program capable of substantially reducing students' risk of school failure.

*Chapter 1 of the Elementary and Secondary Education Act is the Federal government's primary compensatory education assistance program.

Kindergarten. Kindergarten attendance is now so nearly universal that its effects are no longer of great interest. Thus, concern in this area has shifted to two issues: full-day vs. half-day programs, and the effectiveness of particular kindergarten curricula and programs.

A review of the literature by Karweit (1989b) revealed that the effects of full-day kindergarten (in comparison to half-day) are very similar to the effects of preschool. That is, full-day programs do have positive effects on first-grade readiness or performance, but these effects generally disappear by the second or third grade. As with preschool, full-day kindergarten may start students off with good language skills and promote school readiness, but it is not a sufficient intervention by itself.

Our examination of effective kindergarten programs found 20 programs—primarily directed at developing reading or mathematics readiness—that had been successfully compared with control groups using traditional methods. These included Alphaphonics, Astra Math, MECCA: Make Every Child Capable of Achieving, Right to Read, Early Prevention of School Failure, and others; many of these have been recognized as effective by the U.S. Department of Education's Joint Dissemination Review Panel and are listed in its publication, *Educational Programs that Work*. (This publication is available from Sopris West, Inc., 1140 Boston Avenue, Longmont, CO 80501. An Appendix to this paper also lists these and other effective programs.)

A word of caution is in order in interpreting the results, however. Kindergartens are becoming increasingly academic, and in many districts they are introducing the traditional first-grade curriculum a year earlier. In other districts, kindergartens remain primarily nonacademic. Thus, when innovative academic or preacademic programs are evaluated and compared with nonacademic control groups, it is rarely clear to what degree positive effects are due to the particular program or to the fact that an academic program of *any* kind was provided. For example, IBM's Writing to Read Program has small but statistically significant effects on reading performance at the kindergarten level but not in first grade (Murphy and Appel, 1984). Since all first-grades (but only some kindergartens) have an academic focus, Writing to Read's effects in kindergarten are probably partially due to the fact that reading is taught at all.

First-Grade Prevention Programs. Several effective instructional programs build on the proposition that success in first grade, particularly in reading, is an essential prerequisite for success later in school. These programs apply intensive resources, usually including tutors or other addi-

tional staff, to make certain that every child succeeds in beginning reading.

The rationale underlying first-grade prevention differs in important ways from that underlying preschool prevention. In the 1960s, advocates of preschools as compensatory education tools based their arguments on the idea that the key to school success was IQ, and that properly designed early school experiences could have a lasting effect on IQ and, therefore, on school achievement. This argument was found to be wrong; no long-lasting effects of preschool on IQ have ever been found.

In contrast, first-grade prevention programs are based on the argument that success in reading is the basis for success in school, and that the key moment for intensive intervention is first grade, not preschool or kindergarten.

All of the preventative first-grade models that we identified as effective used tutoring, small group instruction, or both, and all were extremely successful in increasing students' reading achievement. Unfortunately, only one, Reading Recovery, had data on the long-term effects of intensive reading instruction in first grade. Researchers compared students who received an average of 60 half-hour lessons from a specially trained Reading Recovery tutor with a group of matched control children. They found that by the end of the first grade Reading Recovery students did substantially better than the control group on an individually administered test of "text reading levels," with an effect size of +.87.* A year later, with no additional intervention, the difference in effect size had dropped to +.45, and by the end of the third year, to +.29 (DeFord, Pinnell, Lyons, and Young, 1987; Pinnell, 1988). This is still a respectable difference, however, and shows that the effects of the program do maintain for at least 2 years.

Classroom Change Programs

Clearly, one of the most effective ways to reduce the number of children who will ultimately need remedial services is to provide the best possible classroom instruction in the first place. Therefore, in an overall strategy to serve at-risk students, introducing instructional methods with proven capacities to accelerate achievement—particularly among these students—is absolutely essential.

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* Effect sizes are standard measures that estimate how much the test scores of one group of students exceed (or don't exceed) the test scores of a comparable group. Effect sizes of more than .20 are considered educationally meaningful.

In a broad search for programs with convincing evidence of effectiveness (as compared with control groups), we found that nearly all such programs fell into one of only two categories: continuous progress models and certain forms of cooperative learning (see Slavin and Madden, 1989).

Continuous Progress Programs. In continuous progress models, students proceed at their own pace through a sequence of well-defined instructional objectives. However, they are taught in small groups composed of youngsters who have similar skill levels, but who often come from different homerooms or even different grades. For example, a teacher may present a unit on decimals to third-, fourth-, and fifth-graders who have all arrived at the same point in the skills sequence. Students, meanwhile, are frequently assessed and then regrouped based on these assessments.

Continuous progress models range from the highly structured and scripted DISTAR program to such programs as Utah System Approach to Individualized Learning (U-SAIL) and Continuous Progress Reading Program: Personalized Educational Growth and Selective Utilization of Staff—Personalized Approach to Continuous Education (PEGASUS–PACE) which use flexible groupings and skill hierarchies, but adapt them to existing curriculum materials and teaching methods.

Cooperative Learning. In cooperative learning methods, students work in small teams to master material initially presented by the teacher. When the teams are rewarded or recognized for group achievement that is based on the individual learning of all team members, these methods can be consistently effective in increasing student achievement in comparison to traditionally taught control groups (Slavin, 1989b).

While a number of cooperative learning methods have been applied successfully in many subjects, only Team Accelerated Instruction (TAI) and Cooperative Integrated Reading and Composition (CIRC) met the criteria we applied to identify effective programs. Interestingly, both approaches combine the use of cooperative teams with forms of continuous progress. In TAI and CIRC, students work in mixed-ability groups but are taught in small groups performing at the same level.

Supplementary and Remedial Programs

In contrast to prevention-oriented classroom change programs, supplementary and remedial programs are provided outside of, and usually in addition to, regular classroom instruction. Often referred to as pull-out

programs, they are used most often with students who already trail their agemates in basic skills.

Interestingly, the most widely used supplementary and remedial programs—diagnostic-prescriptive pullout programs provided under Chapter 1 or special education funding—show little evidence of effectiveness (see Madden and Slavin, 1989). Instead, programs with convincing evidence of effectiveness fall into two major categories: *remedial tutoring programs* and *computer-assisted instruction (CAI).*

Remedial Tutoring Programs. As with the first-grade prevention programs, the most effective supplementary/remedial models involve one-to-one tutoring. However, unlike the preventative tutorial models which use certified teachers or paraprofessionals, remedial tutoring programs use older students, volunteers, or both. Programs of this kind include Training for Turnabout Volunteers, the School Volunteer Development Project, and Success Controlled Optimal Reading Experience (SCORE).

Computer-Assisted Instruction. The quality of research on how computer-assisted instruction affects achievement is highly variable and the evidence of positive effects is inconsistent (see Becker, 1987). Still, a few specific CAI models have undergone high-quality evaluations, and the most consistently effective of these have been forms of the Computer Curriculum Corporation's (CCC) drill-and-practice programs where students spend about 10 minutes per day, in addition to regular class time, using CCC programs. Two specific examples are the Title I Mathematics Laboratory and the Merrimack Education Center CAI programs. Successful CAI programs are often expensive, and their positive effects are moderate, so there is some question about the *cost-effectiveness* of this approach. However, as software continues to improve and as hardware continues to decline in price, computers may become an important part of a remedial strategy.

General Principles of Effective Programs for Students at Risk

The evidence briefly presented in this paper supports the effectiveness of several types of programs for students at risk of school failure. However, some general features characterize effective strategies:

- First, they are well worked out, comprehensive approaches to instruction that invariably include detailed teacher's manuals and usually include curriculum materials, lesson guides, and other

supportive materials. They consist of systematic, carefully constructed, complete alternatives to traditional methods.

- Second, effective preventative and remedial programs use either one-to-one tutoring (from teachers, paraprofessionals, volunteers, or other students) or individually adapted computer-assisted instruction. Instruction in small groups may be effective as a classroom instructional strategy, but it is insufficient as a strategy for helping students catch up with their agemates.
- Finally, virtually all instructional programs deemed effective for at-risk youngsters assess their progress frequently and use assessment results to modify groupings or instructional content to meet individual needs.

Success for All

The instructional strategies and general principles outlined above are a starting point for any discussion of effective programs for youngsters at risk of school failure. However, in order to bring about major change in the educational success of at-risk students, the focus must be on schools—and even school districts—as the unit of change.

Schools must be organized differently. It is not enough to take a little bit of Program A and a little bit of Program B, mix them together, and hope for the best. Rather, we need to articulate a plan through the grades to see that students will achieve success at each step in their schooling. Such a plan would:

- State that the school is responsibile for seeing that everyone succeeds;
- Recognize that success for everyone will require adequate funding;
- Emphasize prevention;
- Emphasize classroom change; and
- Use remedial programs as a last resort.

We have been working in recent years to develop and evaluate Success for All, a schoolwide program designed to accelerate the achievement of children in inner-city schools. This program's most important objective is to ensure that every child will reach the third grade with adequate basic skills, regardless of what it takes to bring this about. By concentrating resources in the early grades and using effective programs throughout the

elementary years, schools can greatly reduce the need for later remedial or special education programs.

Success for All is a good example of how the inner-city elementary school can be restructured to address the issues of retention, ability grouping and tracking, and special education in order to provide academic success for at-risk children. The program integrates the use of reading tutors, an effective reading program, ongoing assessment, preschool and kindergarten, family support teams, a school-based instructional facilitator, teacher training, special education, and a school advisory committee.

First-year evaluation results find that Success for All brought children at all grade levels in the program to about the 50th percentile in reading achievement, compared to average achievement at the 28th percentile among control school students. In addition, only one student was retained in grade, and few referrals were made to special education (Madden, Slavin, Karweit, Livermon, and Dolan, 1989).

Increasing Achievement of At-Risk Students in the Middle and High School Grades

We know much less about how to improve the achievement of at-risk students in middle and high schools than we know about aiding children in the elementary years. At the same time, we invest significantly fewer supplemental education resources at these higher grade levels than we invest at the elementary level. Indeed, only one out of every $10 from Chapter 1, the Federal government's primary compensatory education assistance program, is spent on students above grade eight (Kennedy, Birman and Demaline, 1986).

At the same time, most research on effective programs for disadvantaged students has been conducted with children in grades pre-K through six, so we have no comparable scientific basis for recommending programs that work for at-risk students in the middle and high school years. What we do have at these upper grades is a mix of disparate programs that have been proposed but seldom implemented, or have been implemented but seldom evaluated, or have been incompletely evaluated. We will discuss these programs and their effectiveness under three categories: instructional practice and content in remedial reading, dropout prevention, and tracking and curriculum. Each of these categories clearly illustrates not only the lack of a knowledge base but the lack of a systematic evaluation of program impact as well.

Instructional Practice and Content in Remedial Reading

Although many middle and high school youngsters can not read above the third-or fourth-grade level, and many more perform very poorly on reading comprehension tests (Applebee, Langer, and Mullis, 1989), no proven approaches exist for successfully reaching these students.

Recent teacher and principal surveys (National Assessment of Educational Progress, 1988) report that "remedial reading" goes on regularly in this country's middle and high schools. In recent years, these remedial activities may even have increased with the introduction of State-mandated minimum competency tests in reading as a requirement for high

school graduation. It is questionable, however, whether these endeavors differ much from the practices used in the elementary grades with poor or beginning readers, since few literacy programs focus specifically on adolescents and the few approaches aimed at poor readers in these age groups are seldom evaluated to determine their impact (Alvermann, Moore, and Conley, 1987; Davidson and Koppenhaven, 1988; Ciani, 1981). More often, the "remedial" program consists of using children's stories from elementary grade basal readers along with the same drill and practice exercises that didn't work in earlier grades. Thus, those responsible for the important task of providing effective reading instruction to at-risk students in middle and high schools still need information on instructional practices along with the kind of high-quality content capable of sparking the interest and engagement of older students.

Although there is a strong research base about how to teach beginning reading in the elementary grades (Anderson et al., 1985; Pearson, 1984) and a growing level of expertise on how to help adult nonreaders who volunteer for adult literacy programs, a definite gap remains in providing proven, effective practices for the middle or high school student who is a poor reader.

High-quality reading materials that cover themes of interest to this age group need to be identified or developed. Classroom activities (such as cooperative learning) which emphasize active learning and peer interactions should be investigated. Opportunities for initiative in the choice of reading materials should be considered. And specially designed incentive and support systems may be required for those students who have not yet learned to read well.

Some research work is in progress on these topics. A project on adolescent literacy at the University of North Carolina Center for Early Adolescence is drawing practical ideas from case studies of novel approaches found throughout the country. And researchers at Johns Hopkins University Center for Research on Effective Schooling for Disadvantaged Students are scientifically evaluating adaptations of cooperative learning techniques used for providing comprehensive reading instruction to low-achieving middle school students.

Dropout Prevention Programs

Getting students to remain in school is, of course, a necessary first step in improving their academic achievement in middle and high schools. And, in contrast to the marked shortage of interesting remedial reading pro-

grams for secondary school students, dropout prevention programs seem to exist in almost all large school districts in one form or another. However, the absence of useful evaluations is the Achilles' heel of secondary school programs aimed at reducing dropouts (Natriello, McDill, and Pallas, in press). Recently, a few compendia have described alternative dropout prevention programs (Orr, 1987; U.S. General Accounting Office, 1987; OERI Urban Superintendents Network, 1987; Clifford, 1986; Hahn and Danzberger, 1987; Hahn, 1987; Council of Great City Schools, 1987), but these descriptions neither categorize types of approaches nor offer much research evidence on the impact of specific programs in reducing dropouts or improving student learning in high school.

A four-category typology of high school dropout prevention approaches has been produced that examines where emphases are now being placed and what is actually known about effectiveness (Natriello, Pallas, McDill, McPartland, and Royster, 1988). This typology, based on an extensive review of available program descriptions, identifies four categories that programs need to address:

- Student success in school;
- Positive student/adult relationships;
- Relevance of school; and
- Outside interferences.

Success in School

Dropout prevention programs aimed at improving at-risk students' chances for success in school usually provide extra instructional assistance in required course areas. This may involve supplemental help during the school year through additional remedial or coaching classes, or extra computer-assisted or tutorial instruction. Extra instructional resources, including make-up classes to recover course credits, or remedial classes that may or may not provide credits toward graduation, may also be provided in the summer. Indeed, one of the few well-designed scientific evaluations in the dropout prevention literature shows that an intensive summer instruction program can provide academic achievement benefits for at-risk secondary students (Sipe, Grossman, and Millener, 1987).

Ideas also have been offered for revising assessment methods used in high school to increase chances of academic success for more students. These suggestions include recognition for student progress and allowing

students to demonstrate course mastery in multiple ways. These ideas have seldom been tried, however.

Positive Relations in School

Because many high school dropouts report feeling that no one at their schools cared about their welfare, middle and high schools are attempting to create conditions for a more personal and supportive human environment. For example:

- Large schools are divided into smaller functioning units;
- Students are assigned to a single adult as their main point of contact and guidance in the school;
- The number of different teachers for each at-risk student is limited;
- Students are paired with older students in the same school to help with transitions between levels; and
- Instructional teams of teachers are kept together with the same groups of students for 2 or more years.

For students experiencing the greatest difficulties in coping with the demands of a large secondary school, much smaller "alternative schools" are sometimes made available. These feature more flexibility in programs and more informal as well as closer interpersonal relations between students and staff. The selectivity of most alternative schools, however, makes it difficult to determine whether any improvements in student achievement, attendance, or dropout rates that occur are due to the school program or simply to the selection procedures employed.

Relevance of School

Several approaches have been attempted to strengthen connections between school success and a student's own life and career. These include incentive systems like the Boston Compact which ties good school attendance or schoolwork to job or college opportunities, and the I Have a Dream Foundation which guarantees payment of college expenses to students who meet certain standards. Other programs in this category seek to link school courses more directly to the world of work by improving work-study and vocational-technical course offerings or by adding real-world applications to required courses. Also suggested are programs that strengthen the link between in-school activities and performance and real-

world vocations by providing reliable and timely information about students' academic and nonacademic accomplishments to potential employers. Programs of this type have not been systematically implemented however.

Outside Interferences

In the middle and high school years, students' personal problems—such as substance abuse, gang membership, teen pregnancy, and neglectful or abusive home environment—can often inhibit regular school attendance and attention to class work. For many students, personal difficulties are such enormous distractions from schooling that the problems must be reduced before school achievement can be improved. For many others, school failure and personal problems are part of a general syndrome of low self-esteem and poor general coping skills, where one negative event in or out of school leads to others. For example, adolescent girls who are not successful in school are more likely to become unwed teenage mothers, which further contributes to school failures. Schools, meanwhile, may attempt to assist with such problems either directly or through coordinated referrals to other relevant agencies.

Reaching Conclusions

This review of dropout prevention programs emphasizes several general conclusions. Most individual programs are multifaceted and include two or more of the basic components outlined above. Only one subcategory is *directly* aimed at increasing achievement of at-risk high school students by providing supplemental instructional help, even though it often may combine with other categories in a total dropout prevention package. Overall, some promising ideas have not been seriously attempted, and careful research evaluations of the effects of dropout prevention approaches are almost nonexistent.

Tracking and Curriculum

A number of recent reports on restructuring schools call for modifications in tracking. At the same time, some programs aimed at providing alternatives to tracking are in the early stages of research and development. These programs seek to limit tracking in ways that will alleviate its negative effects on at-risk students, while continuing to vary instructional practice and curriculum to address diversity in achievement.

Meanwhile, recent research reviews on this topic (Gamoran and Berends, 1987; Oakes, 1989; Slavin, Braddock, Hall and Petza, 1989; Braddock and McPartland, 1990) as well as information from schools and school districts that are struggling with the issue suggest the following alternatives:

1. **Postpone between-class homogeneous grouping until as late in the grade span as possible.** The elementary grades should feature within-class methods of adapting instruction to student diversity (such as within-class ability groups in math or reading and some cooperative techniques) or certain cross-age regrouping approaches that emphasize more direct instruction in basic subjects.

2. **Limit tracking in the later grades to those basic academic subjects where differences in students' prior preparation are clear detriments to whole class instruction.** Research has indicated that between-class grouping plans in the later elementary grades are most beneficial when students remain in heterogeneous classes most of the day and are regrouped only in mathematics or reading on the basis of their current skills in each specific subject. A similarly limited use of tracking, restricted to subjects with specific prerequisite requirements, would probably be as effective in the middle and high school grades.

3. **Improve placement criteria and resource allocations whenever tracking is employed.** Tracking in basic courses makes sense only if students are helped to learn better by a stronger learning environment more closely matched to their current needs. Criteria for individual students' course assignments should be current and differentiated, so that placing a student in an upper level math course but in a lower level English course (or vice versa) should not be unusual. At a minimum, separate and recent tests or grades in each tracked subject should be used. School districts should also strengthen instruction in the lower tracks by providing greater resources (such as teaching aides and reduced class size), and should work with teacher representatives to revise regulations and incentives that bring more of the best teachers to the most needy students in the lower tracked classes.

4. **Experiment with new ways to place students in tracked courses that offer middle and high school students greater involvement and incentive for taking challenging courses.** Track-level placement in selected courses could be open to some student choice, with extra incentives provided to those who select demanding

upper level courses. For example, student commitments might be encouraged by combining some choice of track level in required courses with interesting grading options (pass-fail, or extra credits for certain offerings).

5. **Retain separate offerings for gifted students, limited English proficient students, and special education students at each grade level, along with the program of limited tracking described above.** Recognize, however, that such separate offerings are themselves a version of general curriculum tracking with all the attendant problems, and that these offerings should be clearly defined and restricted to meeting the needs of exceptional children.

Improving Untracked Classes

These recommendations for limitations and restrictions on tracked classes, if implemented, would yield schools where most students have heterogeneous classes for much of their program. Thus, it is equally important to make untracked classes work better for all students, including those who are well above average or well below average in general reading or math achievement. Research indicates that this can be accomplished by using the following strategies:

1. **Make available on a regular basis reasonable sources of extra help to any student having serious difficulties in a nontracked class.** For example, additional coaching classes in the subject or peer tutoring services could be provided within the regular school schedule to prevent course failures by students having early troubles in the class.

2. **Equip teaching staffs with a variety of within-class methods to deal with student diversity in nontracked classes.** Cooperative learning techniques that use student teams for learning tasks are useful for actively involving all students from a heterogeneous class in learning activities and for improving their achievement. (Slavin, 1989b; Newmann and Thompson, 1987; Cohen, 1986). Mastery learning methods also deliver extra help and provide extra chances for success to selected students within heterogeneous classes (Block and Bruns, 1976). And staff development opportunities to enable teachers to provide enrichment projects for advanced students and catch-up activities for slow ones should be provided in each subject-matter course area.

3. **Expand opportunities for all students to earn good grades in nontracked classes.** Credit should be permitted to reward individual effort and progress regardless of a student's starting point, and schools should provide multiple methods for students to demonstrate competence in a subject area.

4. **Employ other innovations in secondary school scheduling and student evaluation policies (such as continuous progress programs where students can complete course units at different rates) to adapt heterogeneous class grouping to individual student differences** (Carnegie Task Force, 1989; Boyer, 1983). At the district level, a few school systems have recognized and are in the process of correcting the ways in which their ability grouping policies and practices have helped limit some students' access to learning opportunities (Braddock and McFartland, 1990).

Both system-wide and school site efforts to reform traditional tracking remain rare, despite research evidence and school reform pressures. The limited efforts currently underway to reform tracking illustrate, however, that it is possible to address student diversity in innovative and effective alternative ways. These alternative strategies will, in turn, provide opportunities to evaluate different approaches and to identify the most effective ways to improve the achievement of at-risk students.

Alternatives to traditional tracking in middle and high schools have the potential to greatly improve the achievement and life chances of at-risk students. The examples we've given provide evidence that options do exist However, as with programs to improve instructional practice and content and programs to prevent dropout, the major tasks of implementation, rigorous evaluation, and dissemination still remain.

Implications for Policy

The findings summarized in this report on effective programs for improving achievement of at-risk children at the elementary, middle, and high school levels have many implications for Federal, State, and local policy.

- If it is true that virtually every child can learn to read the first time he or she is taught, then *every child must be given every opportunity for success in reading in the earlier grades.* This implies a shift of resources toward programs such as preschool and extended-day kindergarten that help prevent problems, as well as toward such early intervention programs as intensive first-grade tutoring for students who start to fall behind.

- Chapter 1 and (presumably) State compensatory education programs are not producing enough gain in the achievement of at-risk children. Thus, *experimentation with alternative program designs, including but by no means limited to those mentioned in this paper, is imperative.* At this point, we have some ideas and some evidence about how to do much better than Chapter 1 instruction that is delivered in pull-out programs or in intact classrooms, but not enough to institutionalize any one alternative without further development and research. However, targeting Chapter 1 funds for young at-risk children on prevention, early intervention, and classroom change appears to produce the greatest gains. In high-poverty schools, use of the Chapter 1 schoolwide option makes a great deal of sense, if the programs implemented under schoolwide funding are research-based, effective models.

At the same time, the almost exclusive targeting of Chapter 1 funds to programs for younger children has helped prevent good research and development of effective programs for at-risk students in middle and high school grades. The solution is not to take Chapter 1 funds from the elementary level in order to give more to the middle and high school levels; instead, additional funding of Chapter 1 is needed to expand the effort into middle and high schools while maintaining the concentration of elementary funding on preschool, kindergarten, and first grade.

Federal, State, and local initiatives need to be directed toward developing a stronger knowledge base and effective programs for improving the achievement of at-risk students in the middle and high school grades. To date, researchers in the basic curriculum areas of reading and mathematics have not developed instructional approaches appropriate for low achievers who are older students. Meanwhile, alternatives to tracking, retention, and special education have not been thought through and tried as general reforms of school organization at middle and high school grades. In the secondary grades, special programs for at-risk youth—such as the various dropout prevention approaches—are rarely evaluated, so we are not accumulating knowledge on which special programs do and do not work. And finally, limited funds for at-risk students in the middle and high school grades have prevented ambitious experiments with alternative instructional programs and forms of school and classroom organization.

- *Federal, State and local education agencies should encourage and support rigorous evaluation of plausible alternatives to traditional programs for at-risk students.* Otherwise, we will continue to see no development of effective programs in such critical areas as remedial reading for older at-risk students. Planners will persist in proliferating programs in areas such as dropout prevention where there is no evidence of effectiveness. And we will fail to develop programs that research indicates will be effective, such as those providing alternatives to tracking.

Programs in these areas and many others need to be developed from a research base, implemented in schools, and compared to matched control schools on measures differing from those usually used for accountability so that we avoid teaching to the test.

- *State and local education agencies must be serious about restructuring schools that serve many at-risk students.* They must be thinking beyond pilot projects, beyond single programs or initiatives. They must be looking to a day when success in basic skills and critical thinking, as well as the equal opportunity to progress through the educational system and achieve a fulfilling vocation or career are seen as the birthright of every child, regardless of home background. To bring this vision to reality, progress is necessary on many fronts: early childhood education, early intervention, classroom methods, family support, and implementation of change. We cannot underestimate the magnitude of the job to be done, but we cannot afford to do anything less for our most vulnerable children.

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Appendix

Resources: Effective Programs for Students at Risk

FOR MORE INFORMATION about programs described in this paper as well as about other effective initiatives for at-risk students, you may contact the following individuals. Complete descriptions of most programs are contained in the 1990 edition of *Educational Programs that Work*, available from Sopris West, 1140 Boston Avenue, Longmont, CO 80501. ($10.95 plus $2.00 shipping) More information can also be obtained through your National Diffusion Network State Facilitator.

Program	Contact
Alphaphonics: Integrated Beginning Reading Program	Jeanne Stout Burke, Co-director Sunshine Gardens School 1200 Miller Avenue South San Francisco, CA 94080 (415) 588–8082
Astra's Magic Math Beginning Math Program	Jeanne Stout Burke, Co-director Sunshine Gardens School 1200 Miller Avenue South San Francisco, CA 94080 (415) 588–8082
Basic Literacy through Microcomputers*	Ethna Reid, Director 3310 South 2700 East Salt Lake City, UT 84109 (801) 486–5083
Conceptually Oriented Mathematics Program	L. Leon Webb, Director 161 East First Street, Suite 5 Mesa, AZ 85201 (602) 969–4880

Program	Contact
Cooperative Integrated Reading and Composition	Anna Marie Farnish CIRC-Reading Center for Research on Elementary and Middle Schools 3505 North Charles Street Baltimore, MD 21218 (301) 338–8249
Coordinated Learning Integration—Middlesex Basics*	Barbara Brenner, Director Middlesex Public Schools Kennedy Drive Middlesex, NJ 08846 (201) 968–4494
Early Childhood Preventive Curriculum	Nathan Farber, Director 9240 Southwest 124th Street Miami, FL 33176 (305) 251–5445
Early Prevention of School Failure	Luceille Werner, National Project Director Peotone School District 207–U 114 North Second Street Peotone, IL 60468 (312) 258–3478
Exemplary Center for Reading Instruction	Ethna R. Reid, Director Exemplary Center for Reading Instruction 3310 South 2700 East Salt Lake City, UT 84109 (801) 486–5083
Family Oriented Structured Preschool Activity	Jeanne Chastang Hoodecheck Program Director School District #742 820 8th Avenue South St. Cloud, MN 56301 (612) 253–5828

Program	Contact
Goal-Based Educational Management System	Jordan School District 9361 South 400 East Sandy, UT 84070 (801) 565–7100
High/Scope Preschool Curriculum	Clay Shouse High/Scope Educational Research Foundation 600 North River Street Ypsilanti, MI 48198 (313) 485–2000
HCSTS Reading: Help One Student to Succeed	William E. Gibbons 1801 D Street, Suite 2 Vancouver, WA 98663 (206) 694–1705
MECCA: Make Every Child Capable of Achieving	Peter R. Chester, Supervisor Meriden Public Schools City Hall Meriden, CT 06450 (203) 634–0003, ext. 317
Merrimack Education Center CAI Project	Richard Lavin, Director 101 Mill Road Chelmsford, MA 01824 (508) 256–3985
Oklahoma City Chapter 1*	Myrna DeBose, Administrator Oklahoma City Public Schools 800 North Klein Oklahoma City, OK 73106 (405) 272–5522
Outcomes-Driven Developmental Model	Frank V. Alessi Johnson City School District 666 Reynolds Road Johnson City, NY 13790 (607) 770–1200

Program	Contact
PEGASUS–PACE: Continuous Progress Reading Program	Peggy Collins, Project Director Tuscaloosa City Board of Education 1100 21st Street East Tuscaloosa, AL 35405 (205) 759–5705
Prevention of Learning Disabilities*	Rosa A. Hagin School Consultation Center Fordham University at Lincoln Center 113 West 60th Street New York, NY 10023 (212) 841–5579
Programmed Tutorial Reading	Susan Ross, Director Programmed Tutorial Reading Davis School District 45 East State Street Farmington, UT 84025 (801) 451–1117
Project Conquest*	Bettye P. Spann, Director 1005 State Street East St. Louis, IL 62201 (618) 875–8800
Reading Recovery	Gay Su Pinnell Martha L. King Center for Language and Literacy The Ohio State University 200 Ramseyer Hall 29 West Woodruff Avenue Columbus, OH 43210 (614) 292–0711
School Volunteer Development Project, and Training for Turnabout Volunteers*	Johanna Goetz Coordinator of Training 1410 Northeast Second Avenue Miami, FL 33132 (305) 995–1068

Program	Contact
Strategies in Early Childhood Education	Robert Schramm Project Director P.O. Box 2568 Oshkosh, WI 54903 (414) 233–2372
Success Controlled Optimal Reading Experience	See Alphaphonics
Success for All*	Lawrence Dolan Center for Research on Effective Schooling for Disadvantaged Students 3505 North Charles Street Baltimore, MD 21218 (301) 338–7570
Systematic Teaching and Measuring Mathematics*	Sherry Stumbaugh Project Director Jefferson County Schools 1005 W dsworth Boulevard Lakewood, CO 80215 (303) 231–2381
Teaching Activities for Language Knowledge	Stephanie Hendee Project Director National Training Network 1140 Boston Avenue Longmont, CO 80510 (303) 651–0833
Team Accelerated Instruction: Mathematics	Barbara M. Luebbe Project Director Center for Social Organization of Schools 3505 North Charles Street Baltimore, MD 21218 (301) 338–8249

Program	Contact
Title I Mathematics Computer-Assisted Instruction	Marion J. Cortez Supervisor Lafayette Parish School Board P.O. Drawer 2158 Lafayette, LA 70502 (318) 232–2620
U-SAIL: Utah System Approach to Individualized Learning	Carma M. Hales, Director U-SAIL Project 2971 Evergreen Avenue P.O. Box 9327 Salt Lake City, UT 84109 (801) 486–5491

*A description of this program is not included in *Education Programs that Work*, 1990 edition.

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