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ABSTRACT

This document summarizes the first report of the Study of Academic Instruction for Disadvantaged Students, a 3-year investigation of curriculum and instruction in elementary schools serving high concentrations of poor children. (The first report constitutes volume 2 of a projected series). Recent scholarship, theory, and experimentation in the classroom highlight flaws in the "conventional wisdom" that emphasizes the following approaches to teaching reading, writing, and mathematics to the economically disadvantaged: (1) remediation of the learners' deficits; (2) a curriculum broken down into discrete skills; (3) teacher-directed instruction; (4) a uniform approach to classroom management; and (5) the grouping of students by ability. Appropriately applied, the following alternatives show promise of improving conventional practice: (1) an emphasis on the knowledge students bring to school; (2) explicit teaching of how to function in the "culture" of the school; (3) early emphasis on appropriate "higher order" tasks; (4) extensive opportunities to learn and apply skills in context; (5) an emphasis on meaning and understanding in all academic instruction; (6) a combination of teacher-directed and learner-directed instruction; (7) variation in classroom management approaches depending on the kind of academic work being done; (8) some use of grouping arrangements that mix ability levels; and (9) more flexibility in grouping arrangements. A list of 29 references, a discussion of the larger study of which this is a part, and the table of contents of volume 2, "Commissioned Papers and Literature Review," are appended. (FMW)

Study of Academic Instruction for Disadvantaged Students

Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom

Volume I: Summary

January 1990

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This volume summarizes the first report of the Study of Academic Instruction for Disadvantaged Students, a three-year investigation of curriculum and instruction in elementary schools serving high concentrations of poor children. The study is being carried out by SRI International in collaboration with Policy Studies Associates, under contract with the Office of Planning, Budget and Evaluation of the U.S. Department of Education.

In this volume, we summarize themes in the literature pertaining to (1) curriculum and instruction in mathematics and literacy (including both reading and writing) and (2) instructional strategies and classroom management. Our statement of themes is based on the nine commissioned papers and review chapters contained in a companion volume, *Commissioned Papers and Review of Literature* (the contents of which are listed on the inside back cover of this report).

Subsequent reports will set forth the findings of the Academic Instruction Study after the completion of its first and second year of data collection.

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Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom

Volume I: Summary

January 1990

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Highlights

This report synthesizes current research-based thinking about effective academic instruction for elementary schools serving high proportions of students from impoverished families. For years, the challenges of teaching reading, writing, and mathematics in such settings have prompted both researchers and practitioners to search for better curricula and instructional approaches.

Until recently, a "conventional wisdom" about effective practice in such settings has emphasized the remediation of learners' deficits, a curriculum broken down into discrete skills, teacher-directed instruction, a uniform approach to classroom management, and the grouping of students by ability. In the hands of skilled teachers, the conventional wisdom can work well, especially when the goal is improving student performance on relatively simple academic tasks. It has important limits, though, which are the subject of this report.

Alternatives to Conventional Wisdom

Recent scholarship, theory, and experimentation in the classroom highlight flaws in conventional wisdom and point to promising alternatives. We briefly summarize these alternatives below:

Conventional Wisdom	Alternatives to Conventional Wisdom
• An emphasis on learners' deficits — that is, what the "disadvantaged" student lacks in knowledge, intellectual facility, or experience	• An emphasis on the knowledge students *do* bring to school • Explicit teaching of how to function in the "culture" of the school
• Curriculum that teaches discrete skills in a fixed sequence from "basic" to "higher order" skills	• Early emphasis on appropriate "higher order" tasks • Extensive opportunities to learn and apply skills in context • An emphasis on meaning and understanding in all academic instruction
• Exclusive or heavy reliance on teacher-directed instruction	• A combination of teacher-directed and learner-directed instruction
• Classroom management principles uniformly applied across the school day so as to forestall disorder in the classroom	• Variation in classroom management approaches depending on the kind of academic work being done
• Long-term grouping of students by achievement or ability	• Some use of grouping arrangements that mix ability levels • More flexibility in grouping arrangements

The theme running through our critique is this: Although it represents an improvement over much of the instruction offered in schools serving poor children, conventional wisdom may place an unintended ceiling on student learning. Appropriately applied, the alternatives discussed in this report show promise of improving on conventional practice.

Emerging Standards of "Good Practice"

These alternatives to conventional practice are consistent with views of curriculum and instruction that have gained currency among experts in mathematics, reading, and writing. Emerging standard for these fields have the following emphases:

- *Mathematics*. More work on understanding and applications, with broader coverage of mathematics topics; less work on computation and less redundancy across grades.
- *Reading*. More reading for meaning from the earliest grades (and correspondingly less attention to discrete skills taught out of context); exposure to a wide variety of text, including material that connects with students' backgrounds and experiences.
- *Writing*. More meaningful written communication and less attention to mastery of writing "mechanics" in isolation; introduction to various genres and the processes of writing from the earliest years in school.

The Need for Further Experimentation with Alternatives

While there is research support for alternatives to conventional wisdom, there is much still to learn about the application of these ideas to the range of settings in which poor children learn. We offer these ideas in hopes that they will stimulate further experimentation and study.

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FOREWORD

Secretary Cavazos has made quality schooling for disadvantaged children an absolute priority for American education. The current educational system has too rarely provided these children with the skills and knowledge they will need to be productive citizens. High dropout rates in many of our central cities and rural areas attest to our limited success. Moreover, these dropout statistics are often associated with years of school failure that start in the elementary grades. And while disadvantaged children may bring to school the problems of poverty, it is incumbent on our schools and classrooms to provide the best quality curriculum and instruction to help these children succeed.

The new provisions of the Chapter 1 program contained in the Augustus F. Hawkins-Robert T. Stafford Elementary and Secondary School Improvement Amendments of 1988 also signal a renewed commitment to upgrade the educational achievement of educationally disadvantaged children. They recognize the importance of each school being accountable for the performance of its children, emphasize the need for schools to establish high expectations for student achievement, and help target resources to the neediest.

To investigate teaching and learning in the elementary grades in high poverty schools, the Office of Planning, Budget and Evaluation commissioned a Study of Academic Instruction for Disadvantaged Students. Its purpose is **not** to chronicle educational failure, but rather to examine closely effective academic instruction found in high-performing classrooms in schools serving high concentrations of poor children and to identify school and district conditions which facilitate effective instruction.

Establishing criteria for assessing effective academic instruction was the first task of the study contractor. This work was informed by an extensive literature review and the preparation of commissioned papers by experts in the fields of literacy and mathematics education and instructional management. The product of this task, *Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom*, proposes a new framework for considering effective curriculum and instruction in Chapter 1 and the regular school program. Education decisionmakers seeking to improve the quality of education available to low-achieving children should find this report a useful guide for curricular and instructional reform.

The Office of Compensatory Education Programs is circulating this report widely in the belief that it can assist educators in assessing current classroom instruction and Chapter 1 services, and in implementing program improvement activities to meet the needs of educationally disadvantaged children.

Charles E.M. Kolb
Deputy Under Secretary
Office of Planning, Budget and Evaluation

Mary Jean LeTendre
Director
Compensatory Education Programs

The Search for Effective Academic Instruction for the Children of Poverty

More than one in five of the schoolchildren in the United States come from families in poverty.[1] For educators, policymakers, researchers, and the public, improving poor children's schooling is an increasingly urgent concern. While few are complacent about the quality of the education offered to any children in this country, the rate at which poor children leave school ill-equipped for adult life is particularly alarming. Despite extra resources from the federal Chapter 1 program and despite recent educational reforms, the children of poverty experience failure disproportionately in their early school years. Many of them remain on track for failure, and some well-intentioned efforts to give them special help may even compound their difficulties. From their earliest years in school, these children find themselves *at a disadvantage* in the pursuit of learning, jobs, or personal fulfillment.

In disproportionate numbers, poor children are on track for educational failure.

To improve the education that elementary schools offer poor children, we need both a clearer diagnosis of problems with the school program and clearer ideas about solutions. Current approaches reflect different assumptions about what is wrong and how to improve the situation, as illustrated by questions of basic skills, classroom order, and cultural differences:

- **Basic skills.** Recognizing that a large proportion of disadvantaged students have not mastered basic academic skills, some educators advocate programs that focus exclusively on these skills. Supplementary programs, like the compensatory education supported by the federal Chapter 1 program, often have taken this approach.[2] Other educators look for ways to embed the teaching and learning of skills in broader applications of knowledge.

- **Classroom order.** The difficulty of establishing and maintaining an orderly environment in classrooms with large numbers of disadvantaged students is well known. This difficulty leads some educators to devise systems of rules and behavioral controls that bring a uniform structure to the school day. Others urge that classroom order be derived more directly from, and sustained by, the kind of academic program in which students are engaged.[3]

- **Cultural differences.** The fact that many disadvantaged students' culture and language differ from those of the school leads some educators to urge

that schools accommodate these differences more directly, while others advocate more explicit teaching of "mainstream" culture and language.[4]

These are only a few dimensions of debate about effective ways to teach disadvantaged students.

This report is meant to clarify the terms of debate about the academic education offered disadvantaged students.

This report is meant to clarify the terms of debate by probing and moving beyond what has come to be conventional wisdom about the instruction offered disadvantaged students. The report synthesizes existing scholarship and a set of commissioned papers in three subject areas: mathematics, reading, and writing. The ideas summarized in this document and elaborated in the companion volume focus on the nature of educational problems, and solutions to them, in schools that serve large numbers of disadvantaged students.

At the same time, the report sets forth a research-based perspective to guide further studies, in particular, the Study of Academic Instruction for Disadvantaged Students, a 3-year investigation (now in progress) of the education in selected academic subjects offered to children from impoverished families. This study, supported by the Office of Planning, Budget and Evaluation in the U.S. Department of Education, is an in-depth examination of curriculum and instruction in a sample of classrooms within elementary schools serving high concentrations of poor children. The schools and classrooms are chosen to reflect a range of practices and variation in levels of student academic performance. Though not a proportionate sample of all elementary schools nationwide that serve high concentrations of poor children, the sample is designed to be sufficiently large and varied to enable the study to accomplish three goals:

- Document the range of practices and curricula offered to poor children in typical and high-performing elementary classrooms and schools.
- Describe effective academic instruction found in high-performing classrooms and schools.
- Identify conditions in schools and districts that are associated with effective academic instruction.

This is the first report to emerge from the study. Others will follow, based on the data we gather in sample classrooms. The Appendix to this report offers more detail about study assumptions, design, and likely contributions to understanding the issues under discussion.

Conventional Wisdom, a Critique, and Alternatives

The research evidence reviewed in this report leads to an overall conclusion that much recent thinking about the education of disadvantaged students has been flawed. This thinking, which we call conventional wisdom, itself represents an advance beyond an earlier stage of educational practice that tended simply to ignore the plight of disadvantaged students. The conventional wisdom has some strengths as a basis for curriculum and instruction. Nevertheless, the most recent scholarly analysis suggests that further modifications in thinking and practice are needed.

The most recent research highlights flaws in conventional wisdom regarding the education of disadvantaged students.

What is the conventional wisdom?[5] Stated oversimply, it focuses on disadvantaged learners' deficits and sets forth solutions in the form of principles of curriculum organization, instructional approach, classroom management, and instructional grouping:

- **View of disadvantaged learners:** An emphasis on disadvantaged learners' lack of information and intellectual facility.
- **Curriculum organization:** A model of the curriculum in mathematics and literacy that emphasizes sequential mastery of discrete skills ordered from "the basics" to higher-order skills.
- **Instructional approach:** A high degree of teacher-directed instruction, in which the teacher presents material and supervises students closely, designed to maximize engaged learning time and the frequency of feedback to students.
- **Classroom management:** An approach to classroom management built on generic principles for maintaining classroom order, to be applied uniformly across content areas.
- **Arrangement of instructional groups:** Instructional arrangements that are grouped or tracked by students' ability, not only within class, but also through supplemental programs for children with the greatest educational need.

Conventional wisdom emphasizes learners' deficits, curriculum oriented to discrete skills, teacher-directed instruction, uniform classroom management, and the grouping of students by ability.

We do not suggest that this way of thinking must be discarded, although some researchers advocate doing so.[6]

Our review of the research base indicates that there is this to be said for the conventional wisdom: applied skillfully, it tends to result in good student performance on current standardized tests, especially the tests administered in the elementary grades which emphasize basic skills. This is not a trivial outcome; it is more desirable than the performance now seen in many high-poverty schools. Many classrooms now fall far short of effectively implementing the conventional wisdom, and they might benefit from doing so.

The conventional formula may place an unintended ceiling on the learning of disadvantaged students.

Nevertheless, this formula for effective academic instruction may not succeed in meeting all educational goals for disadvantaged—or any—youngsters. In particular, there is increasing reason to believe that it may place an unintended ceiling on the learning of the disadvantaged student population—for example, by repetitively exposing them to an impoverished "basics only" curriculum and nothing more.[7]

Assessing the merit of the conventional wisdom is an important emerging issue for the Chapter 1 program, which represents the federal government's major investment in the education of disadvantaged students. Aimed at low-achieving students in schools with higher than average poverty, Chapter 1 is deeply rooted in the conviction that these students need something extra. Local Chapter 1 programs have increasingly relied on a general model that exposes students to intense doses of instruction in basic skills, often in small, teacher-directed groups of students who have similar achievement levels. The program does yield achievement gains for participants.[8] However, the disappointing fact that Chapter 1 students' achievement does not tend to catch up with that of their peers has begun to stimulate a reexamination of the typical instructional premises for the program. Increasingly, Chapter 1 policymakers want to implement new ideas about how federal aid can make a difference in the education of disadvantaged students. New legislation stresses the need to improve students' performance in "more advanced skills." Communication between regular and supplemental teachers is now a mandated priority.

For Chapter 1 instruction and for regular classroom instruction in high-poverty schools, this report and this study are intended to contribute to the vigorous search for feasible improvements on the conventional wisdom. The goal is to find better ways of designing elementary-level instruction for disadvantaged students. Our focus is at the classroom level, because we believe that good curriculum and instruction are essential and within the power of teachers and principals to achieve. At that level, the following five aspects of the conventional wisdom about what works in curriculum and instruction for disadvantaged learners need careful reexamination: (1) the underlying conception of the "disadvantaged" learner, (2) the sequencing and challenge of the curriculum, (3) the role of the teacher in instruction, (4) the relationship of classroom management to academic tasks, and (5) the degree and nature of curricular differentiation to accommodate different levels of student proficiency.

This report and study are part of a search for feasible improvements on conventional wisdom.

The Conception of the "Disadvantaged" Learner

Conventional wisdom. A great deal of research and practice has been predicated on the assumption that "disadvantaged" students are deficient in ways that influence their performance in school.[9] A corollary assumption is that disadvantaged students' families have given them a bad start in life. These assumptions, in effect, locate the problem in the learner and his or her background.

Conventional assumptions stress the deficiencies of disadvantaged students and their families.

A critique. These conventional assumptions can be criticized on two general grounds. First, stereotypic ideas about the capabilities of a child who is poor or who belongs to an ethnic minority will detract from an accurate assessment of the child's real educational problems and potential. Second, by focusing on family deficiencies, the conventional wisdom misses the strengths of the cultures from which many disadvantaged students come. This is not to say that dysfunctional families do not exist in poor communities; indeed, such families represent a serious social problem. However, focusing only on the possibility of family dysfunction may obscure the larger picture of a community's culture and its strengths.

Researchers have pointed out the adverse consequences of these conceptions.[10] They include (1) low expectations for what these students can accomplish in academic work, (2) failure to examine carefully what the schools do that

exacerbates (or facilitates the solution of) these learning problems, and (3) misdiagnosis of the learning problems these students face (e.g., interpreting dialect speech patterns as decoding errors).

An alternative view. A growing body of research provides different conceptions of disadvantaged students that help educators avoid these adverse consequences.[11] The central idea is that the disadvantaged child brings to school speech patterns, cognitive experiences, and behavior patterns that do not match the way things are done in school. These students face a difficult learning task—that of learning the culture of the school and at the same time mastering academic tasks. While recognizing that there may be gaps in the disadvantaged student's experience (e.g., limited exposure to print, if not more serious gaps in family support for schooling), the educator builds on the child's experience base and at the same time challenges children to expand their repertoire of experiences and skills.

Like anyone else, disadvantaged students come to school with active minds and already-developed theories.

This perspective gains further support from a decade or more of cognitive research and related theories of learning that have profoundly shaped thinking about education and teaching in recent years. Put simply, these theories picture the learner as an active constructor of knowledge and meaning rather than a passive recipient of information and skills.[12] Furthermore, this line of research has demonstrated that the beginning or "naive" learner, before and during schooling, develops theories about the way the world works as actively as the advanced or expert learner: these theories often misrepresent the world and resist alteration. Although this research has yet to focus on disadvantaged students per se, it implies that they, like anyone else, come to school with more sophistication and more active, inquiring minds than deficit models may presume. That is not to say that disadvantaged students arrive at school on an equal footing with their advantaged counterparts. But they have done a great deal of learning when they come and have more capacity for academic proficiency than is often recognized.

To summarize the alternative to the conventional wisdom, evidence suggests that disadvantaged students will be better able to meet the academic challenge of school if the following principles are followed:[13]

- Teachers know and respect the students' cultural/ linguistic background and communicate this respect in a personal way to the students.
- The academic program allows and encourages students to draw and build on the experiences they have, at the same time that it exposes them to unfamiliar experiences and ways of thinking.
- The assumptions, expectations, and ways of doing things in school—in short, its culture—are made explicit to these students by teachers as they explain and model these dimensions of academic learning.

Teachers can help disadvantaged students succeed at school by finding out and respecting what students bring to school (in addition to determining what they may lack) and by explicitly teaching them how to function in the "culture" of the school.

Sequencing and Challenge in the Curriculum

Conventional wisdom. Conventional approaches to fashioning curricula for disadvantaged students—and indeed for "slow" learners of any kind—follow from the conception of the student as an individual with critical skill and knowledge deficits. Such curricula are characterized by two basic traits.[14] First, these curricula tend to break up reading, writing, and mathematics into fixed sequences of discrete skills, ordered from the simplest (the "basics") to the more complex ("higher-order skills"). Second, instruction typically emphasizes developing mastery of these skills by linear progression through the curricula. By this line of argument, children who haven't mastered spelling, for example, are not thought ready to write stories. Or, in mathematics lessons, practical problems involving multiplication are not introduced until the students can do paper-and-pencil multiplication problems, to say nothing of knowing their multiplication tables. Rigid sequencing appears in curricula at all elementary grade levels.

A conventional curriculum for disadvantaged students has fixed sequences of discrete skills, from "basics" to "higher-order skills."

Not only are many mathematics textbooks, basal reading series, and district curriculum guides built on these assumptions, but also the supplemental programs designed for low-achieving disadvantaged students are especially likely to reflect this basic model of curriculum. From one point of view, this way of building curricula makes good sense. It helps to isolate basic skills that are assumed to be the critical deficiency in the disadvantaged student's repertoire; it provides a clear structure for learning; it facilitates the charting of students' progress; and it provides regular and supplemental instructional programs a common vocabulary for diagnosing what low-achieving students need.

A critique. Despite these advantages, there is broad agreement across experts in all three content/skill areas reviewed in this report that these curricular assumptions are critically limited in several respects.[15] They tend to (1) underestimate what students are capable of; (2) postpone more challenging and interesting work for too long, and in some cases forever; (3) fail to provide a context for learning or for meaningfully employing the skills that are taught; and (4) even reinforce academic failure over the long term. The *students* are literally charged with putting the pieces together into an integrated and useful base of knowledge, and, more often than not, they don't. In the view of many experts, this approach to curriculum lacks both coherence and intellectual challenge for students who experience it.

Rather than leaving the student to put the pieces together, effective curricula should incorporate complex tasks, opportunities to apply skills and understanding, and an orientation to the reasons for learning.

An alternative. Assuming that the academic program for disadvantaged students should convey more than discrete basic skills, the available evidence suggests the following principles.[16] More effective curricula should:

- Balance routine skill learning with appropriate novel and complex tasks from the earliest stages of learning.
- Provide a context for skill learning that establishes clear reasons for needing to learn the skills, affords opportunities to apply the skills, and helps the student relate one skill to another.
- Focus on meaning and understanding from the beginning—for example, by orienting instruction toward comprehending reading passages, communicating important ideas in written text, or understanding the concepts underlying number facts.
- Influence attitudes and beliefs about the academic content areas, as well as skills and knowledge.
- Eliminate unnecessary redundancy in the curriculum (e.g., repeated instruction in the same mathematics computation skills year after year).

The Role of the Teacher in Instruction

Conventional wisdom. Since the mid 1970s, efforts to define appropriate models for instructing disadvantaged students have been dominated by a class of teaching

approaches that we refer to as "direct instruction."* Although there are variations among them, these approaches typically feature (1) teacher-controlled instruction, with considerable time spent presenting lesson material and directly supervising students' work; (2) extensive opportunities for practice and frequent corrective feedback; (3) a careful structuring of academic tasks so that content can be introduced in small, manageable steps; (4) rapid pacing; and (5) whole-group or homogeneous-group formats. For various reasons, this class of approaches lends itself particularly well to the teaching of the linear, discrete skills-oriented curricula discussed above.

We distinguish direct instruction from what has been described more generically as "active teaching"—that is, instruction in which "students spend most of their time being taught or supervised by their teachers rather than working on their own (or not working at all)."[17] Both direct and active instruction emphasize direct teacher control of learning activities in the classroom. However, unlike direct instruction, active teaching does not presuppose any particular type of academic task, pacing, or grouping.

The research evidence supporting various elements of direct instruction indicates that, for disadvantaged populations, it enhances some kinds of academic learning, in particular, those involving discrete basic skills.[18]

While direct instruction effectively supports the learning of discrete skills, it works less well with more integrated and challenging curricula.

A critique. There is growing dissatisfaction about the ability of this category of approaches to convey more integrated and challenging curricula to students. First, students do not need to do much thinking for themselves when the teacher breaks the learning task into small, manageable steps and explains how to accomplish each step. Second, some important academic learning goals don't lend themselves to small, manageable steps. Third, students can easily become dependent on the teacher to monitor, motivate, and structure all aspects of the work they do.

The criticisms of direct instruction are both about the pedagogical technique and the type of curriculum with which it is often associated. Consequently, not all of the

* By "direct instruction," we mean instructional approaches that emulate the model of the same name that was part of the Follow Through Planned Variation Experiment in the early 1970s.

same conclusions can be drawn about active teaching viewed more broadly. However, some of the same objections have been raised, among them the potential danger of dependence on the teacher or lack of opportunity for learners to exercise initiative in structuring academic tasks for themselves, or developing novel solutions to problems.

For an intellectually challenging curriculum, a balance between teacher-directed and learner-directed instruction is needed.

An alternative. In this area, current research does not support abandoning the conventional wisdom but instead suggests balancing it with different approaches. Work on the teaching of learning strategies and other aspects of classroom practice gives reason to believe that a balance of teacher-directed instruction and learner-directed instruction has more to offer the education of disadvantaged students, especially if the goal is to engage students in curricula that are more intellectually challenging.[19] The trick is to strike the right balance between teacher direction and student responsibility, so that students understand what they are doing (and why) and that, over time, their capacity for self-regulated learning increases.

Beyond a few general principles, it is difficult to suggest specific practices without reference to the particular subject matter that is to be conveyed through instruction. Recent research has shifted the focus of attention from the search for generic principles of good instruction (for disadvantaged students or any other population) to the identification of subject-specific principles. There, much work remains to be done to identify pedagogy appropriate to subject-specific instructional goals.

Evidence suggests that the following principles aim at an appropriate balance between teacher-directed and learner directed instruction.[20] Teachers should:

- Teach explicitly the underlying thinking processes along with skills—for example, by modeling the cognitive process involved when interpreting a story problem in mathematics or trying to understand the author's point of view in a piece of literature.
- Within sequences or units of instruction, and across the school year, gradually turn over responsibility for the learning process to the students as they become more capable of constructing knowledge and applying modeled strategies on their own.
- Encourage students to use each other as learning resources and structure their interaction accordingly, as in many cooperative or team learning arrangements.

The Relationship of Classroom Management to Academic Work

Conventional wisdom. Conventional wisdom holds that a uniform structure provides students with clear expectations and guidance regarding interactions with teachers and other students. All classrooms present the teacher with a problem of establishing and maintaining order, and this is especially true in classrooms that serve large numbers of disadvantaged students. The management problems in such classrooms confront teachers forcefully as the year begins, and invite solutions that impose a uniform—sometimes rigid—structure.

To an extent, well-established principles of "good" classroom management have been developed that implement this view.[21] These principles combine good prevention, chiefly through tone-setting and the development of routines early in the year, with appropriate remediation as disruptive behavior occurs.

Conventional principles of classroom management include setting a tone and developing uniform routines early.

A critique. This way of thinking about classroom management leaves out one critical element: the relationship between classroom management and the actual academic work that goes on in the room.[22] This relationship is not necessarily problematic or complex when the work itself is routine and oriented toward basic skills instruction. But when more challenging curricula are introduced, this approach to classroom management can become increasingly unsatisfactory. Project learning in mathematics, for example, may involve simultaneous student groups engaged in projects that, together, increase the level of noise and activity in a room beyond what is conventionally considered optimal.

An alternative. A better perspective on classroom management retains two elements of the conventional wisdom: (1) establishing general ground rules at the beginning of the school year and (2) maintaining order over time through vigilant monitoring and ongoing problem-solving on the part of the teacher, as he or she anticipates challenges to, or distractions from, the primary program of action in the classroom. But this perspective encourages teachers to find a new basis for order in the classroom that emanates as much as possible from academics rather than generic rules, incentives, and consequences for

Without discarding the conventional principles, more effective classroom management can be intimately linked to academic work.

misbehavior. Specific ways of doing this will vary across grades.

In general, then, classroom management should be intimately linked to the nature of the academic work being done. From this perspective, teachers can most effectively manage instruction if they:[23]

- Set expectations for classroom order that are appropriate to the academic work at hand, within broad boundaries established for overall behavior in the room. Students need to be taught explicitly that noise levels, the degree of movement around the classroom, etc., can vary, and under what circumstances.
- Anticipate resistance to the novel and unfamiliar work that is necessarily a part of a more challenging curriculum.
- Plan a strong "program of action," rooted in interesting and engaging academic activities.

Accommodating Differences in Student Proficiency

Arrangements that separate low-achieving children from others appear to solve the problem of matching students with appropriate learning tasks, but may create as many problems as they solve.

Conventional wisdom. Several common arrangements for instructing diverse groups place low achieving children together and separate them from those who do better. Three are especially pervasive: (1) ability-based reading groups in the primary grades; (2) formal or informal tracking in literacy or mathematics instruction in the upper elementary grades; and (3) group-based supplemental services (e.g., Chapter 1 pullout instruction) in both literacy and mathematics. These arrangements have special relevance for classrooms and schools serving large concentrations of disadvantaged students. Here, differentiated arrangements appear to solve a fundamental instructional problem—that of matching students with appropriate learning tasks.

A critique. Differentiated arrangements may, however, create or exacerbate other problems.[24] Most important, low-achieving students tend to become permanently segregated in these groupings or tracks. To make matters worse, determinations of "low achievement" are not necessarily reliable, which means that students' academic abilities can be misdiagnosed. This happens all too often when ethnic or linguistic features (e.g., dialect speech or limited English proficiency) are misinterpreted as signs of

low ability. In addition, some of these arrangements create groupings of convenience—e.g., four to six poor readers in a Chapter 1 reading room drawn from two or three different classrooms—that may not be particularly effective from the students' point of view. Furthermore, segregation in lower-track groups carries with it a visible stigma that contributes to certain students' being labeled "dummies," not to mention the more limited curricula that are sometimes offered such groups.

Still, the research evidence on the efficacy of ability-grouped learning arrangements for low achievers is mixed.[25] Some reviews find positive effects, while others find harmful or inconclusive influences of such arrangements on academic outcomes.

Because the evidence is mixed on the efficacy of ability grouping for low achievers, teachers should consider a variety of alternative arrangements.

An alternative. Research evidence does not warrant doing away with ability-based differentiation altogether.[26] Under some conditions, its effects are positive. However, schools and teachers should at least consider adopting the following principles:

- Use (1) heterogeneous grouping, such as cooperative and team learning, and (2) more flexible and temporary ability-grouped arrangements.
- Integrate supplementary assistance, such as Chapter 1 instruction, as much as possible into mainstream classroom activities and/or provide supplementary instruction at times that do not require students to be away from activity in their main classrooms.
- Maximize individual help to low-achieving students on an ad hoc basis rather than in long-term group-based arrangements.

Standards for Curriculum and Instruction in Mathematics and Literacy

The preceding discussion suggests alternative conceptions of the learner, the curriculum, and instructional practice that apply across all subject areas in elementary schools. Guiding these conceptions is a conviction that disadvantaged students are capable of much more than is typically expected of them and that schools can organize themselves to demand high academic performance from them.[27] There is evidence on which to base this conviction—ranging from advances in understanding of student cognition to dramatic demonstrations of results such as the performance of inner-city youths on Advanced Placement calculus tests.[28] The upshot is to assert that the ultimate criterion for curriculum and instruction offered disadvantaged students is whether it promises to impart the analytical and communicative skills and knowledge necessary for full participation in a technological society.

Curriculum and instruction must help disadvantaged students develop the analytical and communicative skills and knowledge to participate fully in a technological society.

Such an aspiration takes on more concrete meanings when one shifts to a more specific focus on mathematics and literacy curricula, and how they should be taught to elementary school children. Based on our review of literature and expert opinion, certain attributes of "good practice" can be suggested in each subject area. Although there are parallels across areas, the particulars will differ for mathematics instruction and for the teaching of literacy (reading and writing).

These conceptions of good practice reflect both the findings of research and the judgment of relevant professional communities, as expressed by such documents as *Curriculum and Evaluation Standards for School Mathematics* (by the National Council of Teachers of Mathematics) or *Becoming a Nation of Readers* (by the Center for the Study of Reading, the National Academy of Education, and the U.S. Department of Education).[29] We state these standards below in brief, global terms; the reader is referred to corresponding sections in the companion volume for a more detailed treatment of each.

Mathematics

Recent conceptions of good mathematics curriculum and instruction emphasize understanding, applications, and broader coverage of mathematical topics, while deemphasizing computation and reducing redundancy across grades.

Regarding mathematics curriculum and instruction, the following are widely held to be important ingredients for effective elementary *curriculum* in schools serving disadvantaged students:

- An emphasis on the understanding of mathematical concepts that are part of computation, symbols, mathematical problem-solving, etc.
- Reduced emphasis on computational skills in the upper elementary grades, especially when taught out of context.
- A broader range of other mathematical topics including at least geometry, estimation, probability, and statistics, which are covered in greater depth for mastery, rather than touched on for "exposure."
- Opportunities to apply mathematical ideas and skills to novel problems and real-life situations.
- Less redundancy in curricula across grades.

In implementing curricula of this sort, there is widespread agreement that good mathematics *instruction* for this and other student populations involves:

- Explicit teaching of mathematical problem-solving strategies.
- Teacher-student and student-student discourse about mathematical ideas or skills and their applications to life experience.
- Multiple representations of mathematical ideas and operations, including graphical displays and manipulatives.
- Experience with educational technologies as mathematical problem-solving tools (in particular, desktop computers and hand-held calculators) and with other appropriate tools or materials useful for problem-solving.
- Some opportunities for project-based learning of mathematics.

Literacy

While separate (though related) standards can be suggested for curriculum and instruction in reading and writing, two overarching standards apply to the relationship between these two aspects of language arts:

- Effective language arts curricula for disadvantaged students seek to impart a broadly based ability to communicate with and understand written language, rather than a more limited "functional literacy."
- Reading and writing should be taught in a way that meaningfully relates the two to one another, rather than treating them as separate, unrelated "subjects."

Recent conceptions of good literacy teaching stress the integration of language arts leading to a broadly based ability to communicate and understand written language.

Given overall standards guiding the teaching and learning of literacy skills, parallel standards can be suggested for curriculum and instruction focused on reading and writing.

Reading

Good reading *curriculum* for disadvantaged elementary school students, as viewed by many contemporary reading scholars, is characterized by:

- Emphasis on meaning, that is, on comprehending what is read, employing the full range of cues (phonemic, contextual, knowledge-based) as aids to "constructing" meaning.
- Less emphasis on the teaching of discrete coding skills in isolation from their use, as children move up through the grades.
- Exposure to a wide range of appropriate text, including children's literature.
- Reading material that reflects and respects the life experiences and backgrounds of the students.

Good reading curriculum and instruction are increasingly viewed as emphasizing meaning (and de-emphasizing discrete skills taught in isolation), wide exposure to appropriate text, and material that connects with students' experiences and backgrounds.

While a variety of teaching approaches have value in conveying this kind of curriculum to students, it is widely believed by experts that reading *instruction* for disadvantaged students should include:

- Opportunities to engage in extended silent reading of appropriate texts from the earliest stages in learning

how to read, rather than after the "basics" have been mastered.

- Teacher-student and student-student discourse about the meaning and interpretation of material that has been read, as well as its relevance to students' life experiences.
- Explicit teaching of comprehension strategies through means such as cognitive modeling.
- The chance to relate reading to other uses of language, in particular, written and oral expression.

Writing

As with reading, good writing curriculum and instruction are increasingly thought to introduce the processes of writing and emphasize meaningful written communication more than the isolated mastery of writing mechanics.

An emerging conception of a good writing *curriculum* for this student population parallels that for reading in many respects. Such a curriculum:

- Emphasizes meaningful written communication.
- Deemphasizes the learning of written language mechanics (spelling, punctuation, grammar, etc.) in isolation from the act of communicating in writing.
- Draws on students' experiences and knowledge, as well as on other realms of experience less familiar to students.
- Introduces students to processes of writing and the skills appropriate to each stage in the writing process.

To impart this kind of curriculum to disadvantaged students, language arts *instruction* should:

- Provide frequent opportunities to write text from the earliest stages, rather than after the "basics" have been mastered.
- Engage in discourse with and among students about the meaning of what they have written.
- Expose students to various genres, such as narrative, descriptive, and persuasive writing.
- Create the conditions that encourage the use of written language for meaningful communication.

Putting New Conceptions into Practice: A Role for Classroom-Based Studies

These standards and the conceptions of curriculum and instruction on which they rest are not easily realized in practice and are not yet widespread in the nation's schools. But a process of reevaluation and change is under way in many schools that may bring these conceptions of curriculum and instruction into wider use, appropriately balanced with principles from the conventional wisdom.

In concert with other lines of research, classroom-based studies can contribute to improving educational practice.

Classroom-based studies have a central role to play in this process of change. Several other categories of research that do not focus primarily on curriculum and instruction in the classroom have important contributions to make, as well, to an overall understanding of disadvantaged students and the education they receive. In particular, cognitive research is helping to establish how learners construct knowledge in particular subject areas[30]; studies of the learner's home environment and the relationship between it and school are illuminating how these factors affect children's education[31]; research on effective schools has pointed out important principles of instructional leadership and school organization[32]; and investigation of education policy systems and the reform process are helping to understand the environments in which classrooms are situated. Classroom-based inquiry can draw on all of these lines of research, even though its findings are not primarily about student cognition, home–school relations, effective schools, or policy systems. Most important, classroom-based studies can help to translate other research into terms that can guide curricula, classroom practice, and instructional interventions.

The usefulness of classroom-based studies to practitioners and policymakers, however, depends heavily on whether the study designs reflect an understanding of the change process. What we have learned to date from investigations of intervention programs and the change process itself can help inform the design and dissemination of further classroom-based research.

Contributions of Research to Changes in Instructional Practices

Improvement in educational practice is gradual, and it requires stimulation and support.

Two decades of attempts at improving schools have underscored several simple facts: the instructional programs in the school are not quickly or easily changed, nor are changes necessarily improvements. Practices take root over many years and are the result of many forces, among them resource constraints, the nature of available teaching materials, prevailing ideas in the professional community, and kinds of training and support available to teachers.

Research on innovations, school improvement, and the implementation of intervention or reform programs helps identify what it takes to change educational practices. Several principles have particular bearing on the role and usefulness of classroom-based studies.

Superficial changes are popular and common. Although research findings may be announced with much fanfare, their effects on schools are typically modest. Even when the findings can be turned into practical guidelines, many of the realities in schools reinforce the status quo and lead to the adaptation and dilution of planned changes. The sweeping curricular reforms envisioned in the 1950s and 1960s, for example, found eventual realization in most schools as nothing more than a series of high-quality conventional textbooks.[33]

Research findings may result in new fads and catch phrases rather than improvements in practice.

Critics of the way this nation often goes about educational reform have pointed to the problem of faddism.[34] For curriculum supervisors, staff developers, and many superintendents, the professional incentives favor being up to date and pursuing the latest educational buzzwords—not making a long-term commitment to the effective implementation of a few more solidly conceived changes. Thus, school districts may be subject to endless cycles of partially adopting one new educational model, only to abandon it when the next model begins to dominate professional conversations. In this situation, savvy teachers simply go through the motions of complying with each new idea and continue to teach more or less as they always have.

This tendency represents a real danger for the future success of the alternative ideas about curriculum and instruction discussed in this report. These principles and standards, like many others in education, can be turned into

catch phrases with little real substance. Already, "higher-order skills" are coming into vogue. Classroom-based studies and the dissemination efforts based on their findings must look for ways to resist the most superficial versions of these findings.

Local leadership makes a difference in the implementation of innovative ideas. Research on the change process shows that, despite the tendency toward diluting or even subverting a planned change, commitment at the district or school level can lead to effective implementation.[35] Thus, if new ideas are persuasive to key people in districts and schools, they may have better prospects of implementation. Among these key people are superintendents and principals, who can use their line authority both to coerce change (which research shows to be an effective and even necessary step in many cases) and also to provide support in the implementation process (necessary in virtually all cases).

Local leaders with well-conceived agendas for change and a long-term perspective can have powerful effects on classroom practice.

Other key people are the supervisors of curriculum and staff development, whose job is to keep the school district up to date with professional trends. When these people are able to work on well-conceived agendas for change and take a long-term perspective, their effects on classroom practice can be powerful. Their involvement can be an important resource for improvement.

Teachers attend best to practical ideas. Theoretical breakthroughs may be of professional interest to many teachers, but actual implementation of research findings is greatly enhanced by translating the theory into practical advice. Teachers do search for new knowledge that will improve their craftsmanship. They welcome knowledge that has passed the test of acceptance by other teachers and that they consider likely to benefit their students.[36] Like anyone else, they are not eager to overhaul their entire approach to their work; small-scale additions to their repertoire are the easiest to absorb. Again, there is a danger for ideas like those in this report: principles that suggest fundamental changes in conventional wisdom may be turned into rather trivial prescriptions that can coexist alongside conventional teaching approaches.

What Classroom-Based Studies Can Offer

Taking these principles into account, we see three ways that classroom-based studies can contribute to improving curriculum and instruction for disadvantaged students: (1) document more precisely the range of practices now in place, (2) demonstrate what is possible, and (3) show how the school and district environment can stimulate and sustain (or inhibit) classroom practices.

Documenting the Range of Practices Now in Place

Studies have yet to describe, intensively and comprehensively, curriculum and instruction in literacy and mathematics in elementary schools with high poverty concentrations.

Though we know a good deal about the nature of curriculum and instruction in typical schools serving disadvantaged children, our sources of information are largely broadbrush statistical portraits (e.g., from the National Assessment of Educational Progress) or case studies of a particular subject, grade level, or type of setting.[37] Studies have yet to describe, intensively and comprehensively, the elementary curriculum in mathematics and literacy across grades 1 through 6 in schools serving large concentrations of disadvantaged children. What is more, research has not yet studied systematically the instruction for this population at the classroom level in schools that vary across performance levels.

The key questions to be answered concern the degree to which teachers vary their approaches to teaching disadvantaged students by subject area, by type of student population, and by school setting. In addition, although we are aware that the curriculum is likely to be more restricted in settings with high concentrations of these students, we need to know in detail how it is restricted—that is, what does and doesn't get taught in the curriculum as a whole (which combines both regular and supplemental instruction).

Demonstrating What Is Possible

Many people need to be convinced that disadvantaged students can benefit from more challenge.

Documenting the range of current practices does not tell us much about what is possible to accomplish in these kinds of classrooms. Demonstrating—and extending the conception of—what is possible is doubly important because so many people believe that challenging curricula and instruction, however desirable, are beyond the reach of most classrooms and most students in these schools, a

conviction that educators' painful experience and dismal test results may appear to bear out.

Demonstrating what is possible can be done in several ways. Studies of natural variation (of which the Study of Academic Instruction for Disadvantaged Students is one example) can identify exemplary practices that have developed over time at the initiative of teachers and schools, sometimes with resources and the involvement of outsiders. Planned variation studies, experimental studies (e.g., assessments of schools in the Success for All program carried out by Johns Hopkins University), and demonstration projects (e.g., the Ford Foundation's support for improved mathematics curriculum for upper elementary disadvantaged students) can put in place a preconceived improvement program and seek to demonstrate its efficacy through comparative research designs.[38]

Both modes of investigation support "existence proofs": they show that a great deal more can be accomplished under difficult educational circumstances. Furthermore, they can show how it was accomplished.

Understanding How the School and District Environment Influences Academic Instruction in the Classroom

A third goal is equally important for classroom-based studies. In addition to showing the range of current classroom practice and demonstrating what can be done at that level, investigations need to identify the links between effective classroom practice and the environment surrounding the classroom. It is especially important to trace the connections between classroom practice and elements of the school, district, community, and policy environment that define, constrain, or support academic instruction. Understanding these connections is essential both to explain why things are the way they are and to help educators or educational policymakers know how to encourage effective classroom practice in other schools.

Studies also need to connect classroom practice with the surrounding conditions that support it.

Existing research at the school level provides some understanding of these conditions. For example, we know that the school environment should place value on academic work, maintain high expectations for all students in their academic learning, insist on an appropriate level of order in the school as a whole, and provide adequate resources[39] (e.g., library materials for literacy instruction; computer software and hardware for mathematical

applications). However, studies have not always carefully traced the links between these elements of the school environment and what takes place in classrooms, although recent work suggests important linkages:

- Analyses of the profession of teaching and the restructuring of schools suggest the value of a supportive professional environment for teachers, consisting of access to colleagues and expert advice, sufficient autonomy to develop solutions to the various problems posed by instructing this student population, and professional development activities that help to put new ideas in front of teachers.

- In the same vein, researchers have learned some things about the "policy environment" created by district, state, and federal requirements, expectations, and programs. Existing research suggests that, for academic instruction in classrooms to flourish, the policy environment must be committed to high-quality academic instruction for all students, avoid unnecessary constraints on teachers, and provide the requisite resources for their work.

The key questions for studies at the classroom level concern the way in which actions in the school, professional, or policy environment, guided by these kinds of principles, effect changes in the classroom. Furthermore, the full extent of environmental influence on academic instruction in classrooms serving large numbers of disadvantaged students has yet to be appreciated. Many of these influences may stem from the actions of well-meaning educators and the policies or programs they create to improve the situation. Many programs in place today are based on the conventional wisdom, discussed earlier in this volume, which may be limiting the potential effectiveness of these classrooms. Careful examination of the ways these policies and programs do or don't support effective curriculum and instruction can do much to guide future improvement efforts, both by identifying misguided or counterproductive policies and by pointing the way toward more helpful ones.

A Modest Aspiration for the Ideas in This Report

As the preceding discussion makes plain, a variety of classroom-based studies are needed to explore the research agenda raised by the ideas summarized in this report. No one study can address all the relevant issues, and as we have indicated earlier, classroom-based studies will not answer all the important questions to be asked about "disadvantaged" students and the schooling they receive. The Study of Academic Instruction for Disadvantaged Students (described in more detail in the Appendix) is one, but only one, example of the kind of research we think is needed.

But the report is meant for practicing educators as well as researchers. If it stimulates thinking or discussion among educators who work with the children of poverty and helps them consider alternative ways of addressing the teaching challenges before them, the report will have accomplished an important goal. Ongoing experiments by teachers trying to make instruction work for a particular group of children are one of the sources of new ideas for the profession. The critique and alternatives we have suggested are meant to suggest directions for such experiments.

For both researchers and practitioners, the ideas contained in this report are best thought of as a set of well-grounded hypotheses about good curriculum and instruction in schools serving the children of poverty, rather than a new received wisdom about the education of this student population. Although there is research support for the principles set forth in this volume, there is much still to be learned about ways to apply these principles to particular grade levels, mixtures of students, and school settings. In the course of doing so, educators and researchers will evolve better and more elaborated statements of these principles, in addition to discovering altogether different principles. To the extent schools can resist rigid or unthinking attempts to put these ideas into practice, then, the children of poverty will be well served.

The ideas in this report should be taken as grounded hypotheses to be tested further, not a new "conventional wisdom."

Appendix: Study of Academic Instruction for Disadvantaged Students

In this appendix, we discuss the study's setting and focus, as well as the basis for determining the effectiveness of instruction. Following that, we note the primary features of the study's design and the kinds of contributions it will make to knowledge in the field.

The Setting for the Study: Schools Serving High Concentrations of Poor Students

A study of academic instruction for "disadvantaged students" needs to begin with a definition of the population of students in question. Our focus is on children whose families live in poverty—a condition associated with a high risk of school failure. This group includes many children who have a home language other than English, and their limited proficiency in English is also associated with a risk of school failure.

Rather than studying the problems that children of poverty face in whatever schools they attend, we are examining classrooms in schools that serve high concentrations of poor children. Research shows that children in such schools face a double disadvantage, from their own poverty and that of the group: low achievement is most likely among poor children who attend school with predominantly poor classmates. In practice, then, this will be a study of high-poverty classrooms and schools. Most, but not all, of the students attending these schools will themselves come from poor families.

The schools in this study's sample reflect urban, suburban, and rural settings in which many of the nations poor children are educated: all are neighborhood schools, though many have specialized programs that attract some students from outside the neighborhood attendance area. Reflecting a range of effectiveness, from adequate to outstanding, the classrooms in these schools will afford us the chance to investigate how teachers implement various approaches to curriculum and instruction for disadvantaged students.

The Focus of the Study: Curriculum and Instruction at the Classroom Level

The study will focus on curriculum and instruction in the classroom. It will describe the body of content and skills that students are expected to master; it will also examine the instructional behaviors and academic tasks that structure students' experience in the classroom. This focus reflects our assumption that curriculum and instruction are major determinants of the quality of education. In choosing this focus on curriculum and instruction, we are giving less emphasis to other lines of research noted earlier in this report (e.g., on student cognition, the child's home environment) that also offer plausible explanations for educational problems.

The study's purview is still broad. As this report illustrates, much has been learned and written about effective curriculum and instruction. Prior research gives us frameworks for examining what is taught and how in literacy and mathematics, as well as examining more general approaches to classroom management.

The Basis for Determining the Effectiveness of Curriculum and Instruction

In addition to describing the curriculum and instruction found in a sample of classrooms, this study will arrive at judgements of effectiveness. To do so, we must make assumptions about what constitutes a valid measure of effectiveness. We assume that students' performance and gains on standardized tests, measured over an academic and a calendar year, are data that will help us distinguish classrooms and schools in which students learn more or less, but are not by themselves sufficient measures of the extent to which new standards of curriculum and instruction are achieved.

We are well aware of the limitations of standardized test scores—for example, that they underrepresent the learning of higher-order skills, a key dimension of the complaints over conventional "good teaching" for disadvantaged students. We are therefore planning to use four other measures:

- A test of mathematical problem-solving specially designed to get at higher-order thinking.

- Analysis of student writing samples.
- Teacher judgments about student competence and mastery of the reading, writing, and mathematics curricula.
- Analysis of the degree to which the practices and curricula we observe conform to research-based standards of effective practice.

We are thus assuming that no single measure fully captures the quality of curricula and instruction, and are therefore using these alternative measures to provide a more complete picture of learning outcomes.

Overview of Study Design

The kind of study we are undertaking enables us to investigate curriculum and instruction intensively at the classroom level and relate patterns of enacted curriculum to student outcomes. The key features of our study design are as follows:

- The 15 elementary schools in our sample are located in 6 districts in 3 states (California, Ohio, and Maryland): within these schools a total of 90 classrooms and approximately 2,700 children (per year) are included in the investigation.
- Using data collected through teacher and student interviews, observation, teacher logs, and inspection of materials, we will describe the curriculum and instruction in these classrooms.
- We will test children in literacy and mathematics skills at the beginning and end of two consecutive school years, following each of three cohorts (grades 1, 3, and 5) through that grade and the next.
- Drawing on both student performance and expert theory about curriculum and instruction, we will analyze qualitatively and quantitatively the effectiveness of the curriculum and instruction experienced in classrooms under study.

What the Study Will Contribute

In analyzing the data from observations and interviews, we will be able to discern examples of both conventional and alternative approaches to defining the problems of disadvantaged learners, selecting and sequencing curriculum topics, balancing teacher-directed and student-directed instruction, and so forth. Thus, our analysis will help us to assess different views about what works in curriculum and instruction for classrooms with high concentrations of disadvantaged students. It will contribute to the re-examination of the conventional wisdom and the search for alternatives, discussed above and in the companion volume of this report.

The reports to emerge from the study are meant to accomplish three analytic goals. First, the reports will describe what is taught in reading, writing, and mathematics, and the manner in which these subjects are taught, in schools serving large concentrations of disadvantaged students. The practices found in the sample schools, although not statistically representative of all schools with high concentrations of disadvantaged students, will illustrate variations and typical patterns in teachers' expectations and content knowledge, the use of time in the classroom, curriculum content, instructional strategies and grouping, school facilities, and interactions among teachers and with the community.

Second, the report will identify effective practices in these subject areas, with reference both to student learning outcomes and to current standards of "good practice." Here we will investigate classrooms that exemplify the conventional wisdom in particular respects and classrooms that are trying alternatives. We will compare classrooms along many dimensions, including the degree of emphasis on skills versus applications, curricular integration within and across subject areas, the proportion and uses of teacher-directed instruction, discourse about content, grouping techniques, and the teaching of thinking strategies. Student performance on several measures will form one basis for drawing comparative conclusions, although we will emphasize the use of diverse standards in this regard.

A third goal will be to identify policies and procedures at the school and district levels associated with the presence of effective practices. In particular, we hope to shed light on the role that district and school leaders can play, the influences of staff development, and the effects of policies regarding testing, discipline, curricular standards, promotion, and other matters that impinge on the classroom.

Footnotes/References

Because the argument in this volume relies heavily on the commissioned papers and literature review chapters contained in a companion volume—*Better Schooling for the Children of Poverty—Volume 2: Commissioned Papers and Literature Review* (Menlo Park, CA: SRI International, November 1989)—we refer below simply to the paper or literature review author and *"Volume 2"* to avoid unnecessary repetition in referencing.

1. H. Hodgkinson, *All One System: Demographics of Education, Kindergarten through Graduate School* (Washington, D.C.: Institute for Educational Leadership, June 1985).

2. Office of Educational Research and Improvement, *The Current Operation of the Chapter 1 Program* (Washington, D.C.: U.S. Department of Education, 1987).

3. See paper by W. Doyle, *Volume 2*.

4. See, for example, debates discussed in J. L. Davidson (ed.) *Counterpoint and Beyond* (Urbana, IL: National Council of Teachers of English, 1988) regarding these issues in reading.

5. The conventional wisdom in mathematics, reading, and writing instruction is summarized in literature reviews by A. Zucker and by M. Knapp and M. Needels, *Volume 2*.

6. For example, see paper by L. Moll, *Volume 2*.

7. See paper by W. Doyle, *Volume 2*.

8. Office of Educational Research and Improvement, *The Effectiveness of Chapter 1 Services* (Washington, D.C.: U.S. Department of Education, 1986).

9. See J. Brophy paper in *Volume 2*—the paper makes useful distinctions among common conceptions of the "deficits" many poor children bring to school.

10. Papers by L. Moll and W. Secada in *Volume 2*, for example, provide an articulate critique of deficit models of the "disadvantaged" learner.

11. See L. Delpit, "The Silenced Dialogue: Power and Pedagogy in Educating Other People's Children" *Harvard Educational Review*, vol. 58, 1988, pp. 280-298; S. Heath, *Ways with Words* (Cambridge: Cambridge University Press, 1983); J. Ogbu, *Minority Education and Caste: The American System in Cross-Cultural Perspective* (New York: Academic Press, 1978).

12. See M. Linn, *Establishing a Research Base for Science Education: Challenges, Trends, and Recommendations* (Berkeley, CA: Lawrence Hall of Science/ University of California at Berkeley, May 1986).

13. See papers by B. Neufeld and L. Moll in *Volume 2*, which summarize evidence related to these principles; also J. Comer, "Educating Poor Minority Children," *Scientific American*, vol. 259(5), pp. 42-48.

14. See paper by W. Doyle in *Volume 2* for an analysis of conventional approaches to organizing curriculum.

15. See papers by A. Porter, R. Allington, and J. Brophy in *Volume 2*.

16. Papers in *Volume 2* review existing evidence regarding the efficacy and desirability of balancing basic skills learning with more challenging curricula. For example, see papers by A. Porter and C. McKnight regarding mathematics curricula, D. Pearson and G. Garcia regarding reading curricula.

17. J. Brophy and T. Good, "Teacher Behavior and Student Achievement," in M. Wittrock (ed.), *Handbook of Research on Teaching, 3rd ed.* (New York: MacMillan, 1986).

18. For a review of this evidence, see paper by H. McCollum in *Volume 2*.

19. Clear examples can be found in the teaching of reading, e.g., the work of Palincsar and Brown with "reciprocal teaching"; see paper by D. Pearson and G. Garcia for a review of this and related work.

20. See papers by D. Pearson and G. Garcia, and J. Brophy in *Volume 2*; work by R. Slavin and others on the efficacy of cooperative learning arrangements, as discussed in H. McCollum review, Volume 2.

21. J. Brophy, "Research Linking Teacher Behavior to Student Achievement: Potential Implications for Chapter 1 Students," in B. I. Williams et al. (eds.), *Designs for Compensatory Education: Conference Preceedings and Papers* (Washington, D.C.: Research and Evaluation Associates, 1986).

22. See paper by W. Doyle, *Volume 2*.

23. The basis for these principles is best described in paper by W. Doyle, and also in review by H. McCollum, *Volume 2*.

24. See H. McCollum review in *Volume 2*.

25. Consider evidence from research syntheses by Slavin, Hallinan, Persell, and Wilkinson, reviewed in H. McCollum's paper in *Volume 2*.

26. See, for example, R Slavin, *Ability Grou ; and Student Achievement in Elementary Schools: A Best Evidence Synthesis* (Baltimore, MD: enter for Research on Elementary and Middle Schools, Johns Hopkins University, 1986).

27. The point is persuasively argued by R. Calfee in "Curriculum and Instruction in Reading," in B. I. Williams et al. (eds.), *Designs for Compensatory Education: Conference Preceedings and Papers* (Washington, D.C.: Research and Evaluation Associates, 1986).

28. J. Mathews, *Escalante: The Best Teacher in America* (New York: Holt Rinehart, 1988).

29. *Curriculum and Evaluation Standards for School Mathematics* (Reston, VA: National Council of Teachers of Mathematics, May 1989) and Anderson et al., *Becoming a Nation of Readers* (University of Illinois: Center for the Study of Reading, 1985).

30. For example, A. Schoenfeld in problem solving ("Beyond the Purely Cognitive: Belief Systems, Social Cognitions, and Meta Cognitions as Driving Forces in Intellectual Performance," *Cognitive Science*, 1983, vol. 7, pp. 329-363); W. Kintsch and T. A. Van Dijk in reading ("Toward a Model of Text Comprehension Production," *Psychological Review*, 1978, vol. 85, pp. 363-394); M. Scardamalia and C. Bereiter in writing ("Research on Written Composition," in M. Wittrock (Ed.), *Handbook of Research on Teaching*, New York: Macmillan, 1986); J. Larkin in physics ("Models of Competence in Solving Physics Problems," *Cognitive Science*, 1980, vol. 4, pp. 317-345).

31. See work reviewed in paper by P. Shields and D. Shaver, *Volume 2*.

32. A brief review of this line of research appears in P. Shields and D. Shaver, *Volume 2*; J. C. Purkey and M. S. Smith, "Effective Schools--A Review," *Elementary School Journal*, vol. 83(4), pp. 427 452.

33. L. Cuban, *Helping Policymakers Become Streetwise: The Art of Changing Schools* (Stanford University, February 1989); M. Atkin and E. House, "The Federal Role in Curriculum Development, 1950-1980," *Education Evaluation and Policy Analysis*, Vol. 3, 1981, pp. 5-36.

34. R. Slavin, "PET and the Pendulum: Faddism in Education and How to Stop It," *Phi Delta Kappan*, June 1989, pp. 752-758.

35. M. Huberman and M. Miles, *Innovation Up Close: A Field Study in Twelve School Settings* (Andover, MA: The NETWORK, 1983); M. Mclaughlin, "Learning from Experience: Lessons From Policy Implementation," *Educational Evaluation and Policy Analysis*, vol. 9, 1987, pp. 171-178.

36. M. Huberman, "What Knowledge is of Most Worth to Teachers? A Knowledge-use Perspective," *Teaching and Teacher Education*, vol. 1, no. 13, 1985, pp. 251-262; K. S. Louis and R.A. Dentler, "Knowledge Use and School Improvement," *Curriculum Inquiry*, vol. 18, no.1, 1988, pp. 33-62.

37. For example, the *Reading, Writing, and Mathematics Report Card* reports by the National Assessment of Educational Progress; see case study work such as J. Anyon, "Social Class and the Hidden Curriculum of Work," *Journal of Education* , vol. 162, no. 1, 1981, pp. 118-132.

38. R. Slavin et al., *Success for All: First-Year Outcomes of a Comprehensive Plan for Reforming Urban Education* (Baltimore, MD: Center for Research on Elementary and Middle School, Johns Hopkins University, 1989); E. Silver, *Improving Mathematics Education for Educationally Disadvantaged Middle School Students—Brief Project Summary* (Pittsburgh, PA: Learning Research and Development Center/University of Pittsburgh, March 1989).

39. See review by P. Shields and D. Shaver in *Volume 2*.

Readers wishing more extended discussions of the ideas presented in this volume are referred to the companion volume.

Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom

Volume II: Commissioned Papers and Literature Review
Michael S. Knapp and Patrick M. Shields (eds.)

Part One: Towards Effective Curricula and Instruction in Literacy

I "Effective Literacy Instruction for At-Risk Children" — R. Allington

II "Modifying Reading Instruction to Maximize Its Effectiveness for 'Disadvantaged' Students -- G. Garcia and D. Pearson

III "Social and Instructional Issues in Educating 'Disadvantaged' Students" — L. Moll

IV "Review of Research on Curriculum and Instruction in Literacy" — M. Knapp and M. Needels

Part Two: Towards Effective Curricula and Instruction in Mathematics

V "Good Teaching of Worthwhile Mathematics to Disadvantaged Students" — A. Porter

VI "Selected Issues for Studying the Mathematics Education of the Disadvantaged" — W. Secad:

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