

Implementing Thinking Skills Instruction in an Urban District: An Effort to Close the Gap

School and community support for new programs and curriculum materials help elementary students achieve.



Fifth-grade students observe and record data in a mathematics and science problem-solving module.

In Paterson, New Jersey, with 90 percent minority students in a school population of 23,000, large numbers of students are in remedial and special education programs. Reflecting a standard pattern among the urban poor, the achievement gap begins in kindergarten and widens as students move through the system.

In an effort to reverse this pattern, we instituted a Cognitive Instruction Project (CIP) five years ago to improve academic achievement of these students. Our long-range plan was to start teaching thinking skills in all kindergarten classes in 1982, then, pending evaluation, to add an additional grade each year. The first year, 2,000 kindergarten students were involved. To date, CIP reaches 8,000 students through third grade.

We evaluate results of CIP by standardized tests and teacher evaluations. In line with state guidelines, analysis of improvement is assessed by a test of significance (t-test) of the California Achievement Tests scores prior to and following thinking skills implementation. We find a steady trend toward statistically significant academic improvement. In addition, a comparison between scores of kindergarten students who had not been exposed to the program with those who experienced it in the first year showed improved reading scores from the 42nd percentile to the 54th and mathematics scores from the 50th to the 59th. By 1985-86, this same group tested in the 59.9th percentile for reading and 72.3d for mathematics. Teacher evaluations of program benefits to students also have been consistently positive.

Nevertheless, it is difficult to isolate variables that affect student achievement in a district. In Paterson during the 1985-86 school year—the same

year in which the percentiles for third-grade students showed that this group had made significant improvement since kindergarten—the district changed basal textbooks in both reading and mathematics and experienced a teachers' strike that delayed the start-up and implementation of the program and of the school year.

How CIP Was Designed

The project planners included members of the Paterson Department of Research and Development and approximately 40 educators, including principals, curriculum supervisors, and classroom teachers. This group formulated a theoretical foundation, designed the program, and launched CIP, using research from a number of sources. For example:

- Research supporting multiple intelligences and the plasticity of intelligence (Guilford 1967, Feuerstein 1979, Pyle 1979, Sternberg 1984) indicates that thinking skills not developed in a student's environment can be taught, and teachers can be trained to instruct in these skills (Williams 1982, Williams and Hagopian 1986).

- The large numbers of students in remedial and special education classes indicated that instruction in primary grades (K-3) was clearly preferred over instruction in later grades if the achievement gap was to be narrowed.

- Although cognitive skills instruction in content areas is ideal, extensive teacher training and monitoring are necessary to ensure proper implementation. Because of staff size and inservice training constraints in Paterson, we decided to use materials that isolated thinking skills instruction. Using these materials, we would be able to train and monitor staff and to evaluate materials, strategies, and results. The district also developed interdisciplinary modules;

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these incorporated higher-order thinking skills instruction into the content areas for the intermediate grades.

●We decided to use standardized achievement tests to evaluate results of instruction in thinking skills (Whimbey 1985) because raising achievement levels for all students was our primary goal. Because the California Achievement Tests were already part of our program, we decided to use them, rather than to evaluate cognitive skills apart from content.

●By analyzing scores of California Achievement Tests for elementary students, we determined that verbal skills, comprehension, and problem solving were major areas of difficulty. Language ability is a major skill necessary for academic achievement and a basic impediment for urban student success as identified by achievement tests (Blank 1973). Therefore, in urban districts such as Paterson, teachers must mediate thinking skills instruction through language to enhance language development and expression.

Having established a research base and need for the program, we identified project subcommittees to implement CIP. Subcommittees dealt with involving the community and parents, training and monitoring staff, identifying or developing instructional materials, meeting special needs such as referral services and a resource room, and evaluating results.

Launching CIP

Involving community and parents, training staff, and identifying and developing

instructional materials were the critical components as we launched CIP in our kindergartens.

We made parental involvement a high priority because we wanted to increase parents' participation in instructional activities at home and to educate them about thinking skills. Thus, we planned parent workshops, take-home lessons to be completed by students and parents, and opportunities for parents to observe their children being taught thinking skills. Parent Visitation Day coincided with a "Thinking Is Fun" poster contest and attracted nearly 1,700 parents of kindergarten through third-grade students to district schools. Community businesses and organizations responded to requests from the Paterson project by providing various forms of support and incentives for parents to attend meetings and share the responsibility of educating their children.

The second priority, staff development, was addressed three ways.

●**Direct training.** All teachers involved in thinking skills instruction attended an awareness workshop on school time to learn about recent research in intelligence and learning. Follow-up workshops outlined skills and demonstrated



Kindergarten students learn to recognize and reproduce patterns using Cognitive Instruction Project manipulatives.

Cognitive Instruction Project Materials

Kindergarten

Learning To Think (SRA)
Read Aloud (SOI)
Math Thinking Stories (Open Court)
Problem Solving
(Paterson Board of Education)
Manipulatives (DLM)

First Grade

Learning To Think (SRA)
Listening With Understanding (DLM)
Oral Language (DLM)
How Deep Is The Water
(Open Court)
Willy the Wisher (Open Court)

Second Grade

Chicago Mastery Learning
(Comprehension)
Think and Write (DLM)
Listening (Educational Insights)
Bowser (Open Court)

Third Grade

Chicago Mastery Learning
(Comprehension)
Vocabulary Learning Strategies
(CMLR)
Patterns (Midwest)
Problem Solving
(Modern Education Corp.)
Bargains Galore (Open Court)

materials. In addition, university lecturers presented workshops addressing such topics as child development, perception, and imagery.

●**Grade-level meetings.** Because of the size of the district and the number of teachers involved, math and reading resource teachers were trained to facilitate discussions, answer questions about lesson content and student response, and share instructional strategies. These meetings usually take place monthly on school time.

●**Thinking skills course.** In each of the four years since thinking skills instruction has been implemented, we have provided a 15-hour course (7-8 sessions after school) for elementary teachers. Local university professors, researchers, and lecturers/authors speak on topics related to thinking skills instruction. The 70-80 teachers who attend the course each year receive credits toward salary increments.

A third priority was materials and instruction. A committee developed strategies and activities to implement CIP curriculum materials (fig. 1). Instructional guidelines, developed by the committee and the Department of Research and Development, are distributed to all teachers. One year prior to districtwide implementation, selected materials are piloted in identified schools. They must: (1) address specific identified skills; (2) provide lessons that can be taught in approximately 30 minutes during

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language arts instruction; (3) provide instruction that requires minimal staff development; (4) provide lessons that require little teacher preparation time; and (5) use nonconsumable materials where possible.

Looking Back

As we continue in our fifth year of teaching thinking skills, we have learned that organization, written instructions, and a systematic teacher support system, including monitoring, are essential. Only a structured plan, with support from the superintendent, curriculum supervisors, and principals, can accomplish the magnitude of change that we determined is necessary. Staff development, along with written instructional activities and strategies, will continue to be

needed until teacher training programs prepare teachers to teach thinking skills.

In addition, systematic monitoring is needed to assist teachers and support instructional goals. Periodic classroom visits are essential. We have also found that a formal evaluation instrument provides important information for program revision and improvement.

Above all, any educational change needs to be built upon a dedicated and persevering faculty and a belief in the learning potential of all students. Paterson's Cognitive Instruction Project represents a continuing effort by an urban district to improve students' ability to comprehend and evaluate information and, thus, to increase their options for productive participation in society. □

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Working with children at home, a parent reinforces categorizing skills taught as part of the Cognitive Instruction Project.

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