

PROPOSED APPLICATION FOR APPROVAL OF INSTRUMENTAL ENRICHMENT AS AN INTERVENTION SUPPORTED BY THE U.S. DEPARTMENT OF EDUCATION, THROUGH THE WHAT-WORKS CLEARINGHOUSE (Fall 2008)

(On behalf of the North American Feuerstein Alliance)

David S. Martin

Evidence of Effectiveness

1. The Instrumental Enrichment Cognitive Strategies Program (I.E.) is designed to enhance students' generic cognitive strategies, which apply across all curricular areas.

A multi-year application of the program in the Taunton (MA) Public Schools implemented the program in experimental classrooms and contrasted the results with control classrooms over an initial pilot period of 3 years, before full implementation across the school district for at least the next 15 years. The population of this school district is urban and widely diverse in terms of cognitive achievement and first-languages of the students. The effects of the program in the pilot study on reading comprehension scores on the Stanford Achievement Test for Reading (SAT-R) were examined. After the first year the experimental group mean increased by 28% in the comprehension section and 25% in total reading, while the control group mean increased by 8% in comprehension and 10% in total 3% in comprehension and by 5% in total reading. During the third year the experimental group mean increased by 42% in comprehension and by 5% in total reading while the control group mean increased by 2% in comprehension and by 7% in total reading. Teachers' responses were also studied; they reported transfer of strategies learned in the program, increased participation of I.E. students in other classes, and increased tolerance of individual differences among students as indicated by their willingness to help fellow classmates. Finally, the Massachusetts state assessment results were studied; 8th and 12th grade students had not had I.E., and their test scores continued to be below the state norm; the 4th grade students had had one year of I.E. and had the highest scores which the school district had ever had, and in comparison with other urban centers, Taunton results were outstanding (Williams and Kopp, 1993).

A different type of implementation occurred in a parent-teacher-operated after-school program in Fairfield County, Connecticut. In a twice-per-week after-school program over a period of two years, scores of students improved on the Ravens Standard Progressive Matrices (a test of general reasoning skills) in a pre-post format; of 11 students in the program, one student showed no change, and 8 of the remaining 10 students' scores improved in total number of items correct. Teachers in the program were also asked to indicate changes in their students' in-class behaviors by completing a checklist of 18 thinking behaviors before and after the intervention; important improvement in teacher-observed student behaviors occurred in: concentrating on one task for an appropriate period of time, reduced errors in written work, giving relevant answers to teacher questions, giving complete answers to

teacher questions, describing the use of multiple problem-solving strategies for a given problem, and defending their opinions on the basis of logical evidence (THINK! of Fairfield County, 2004).

In addition, the Fairfield County implementation asked I.E. students to comment on their own self-perception as thinkers, following their participation in the program. Students' open-ended comments included their perception that they had: begun to think through problems before reacting with a solution, improved in their writing, become more "aggressive" with completing homework, becoming more careful in "what I do", improved in concentration during school time, able to converse more smoothly with fellow students, become more independent as thinkers, and improved in listening to the instructions for a problem-solving task.

For at least 20 years, the efficacy of I.E. has been evaluated on a broad range of populations; studies have included special categories such as EMR, deaf, blind, learning-disabled, emotionally disturbed, behaviorally disordered, brain-injured, socio-economically disadvantaged, and more. An early study in Israel involved 548 socio-economically deprived adolescents, at four sites. Pre-post comparisons indicated that the IE experimental group was superior to the control group on the Primary Mental Abilities Test, interpersonal conduct, self-sufficiency, and adaptation to work demands (Rand, Feuerstein, & Hoffman, 1975).

A study of learning-disabled students found that students receiving I.E. showed 1.7 years of improvement in a year on the above-mentioned Ravens test as compared to 0.2 year for the control group (Shayer and Beasley, 1987). A study of low-achieving students was conducted in Venezuela; after a total of 275 hours of I.E. instruction for an experimental group by comparison with a control group, a statistically significant improvement was found for the experimental group on the Cattell-II test in the areas of general intellectual abilities, academic performance, and self-concept (Ruiz, 1985). Ruiz found similar results on the Lorge-Thorndike non-verbal intelligence test.

A large implementation of the program occurred in the Bahia state of Brazil, using more than 15,000 students. The authors found that 79% of the students in the experimental group showed improvement in math and language examinations, while only 44% of the control students did so (Tinoco, Mela, & Varela, 2000). A study in the Cleveland (OH) Public Schools found significant differences on the mathematics part of the Ohio Proficiency Test for the I.E. experimental group by comparison with a control group (Poncellet, 2002).

2. In the Taunton (MA) implementation, aggregate daily attendance was also studied; over the 3-year period of the study the aggregate daily attendance of the experimental group was 4% higher than the control group. Parents of students in the program in Fairfield County (CT) also reported that their children had changed, according to parents' observations, in: verbal ability, understanding of teacher's academic expectations, positive peer relationships, organization of tasks, follow-through on

academic tasks, efficiency in completing school assignments, making connections between the cognitive strategies taught in I.E. and various subject matters, slowing down to think through a problem before embarking upon it, problem-solving, planning behavior, reduced impulsivity, greater detail in writing, and improvement in mathematical skills.

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