Annual ADI Excellence Awards

By Wes Becker

Awards for excellence in contributions to the application of DI technology to education were presented at the 11th Annual Direct Instruction Conference for excellence in administration, teaching, and supervision. The award committee did not make an award for excellence in university level teaching and research this year.

Excellence in Administration

This award was made to Phyllis Wilken, Principal of Garden Hills Elementary School in Champaign, Illinois. The presentation was made by Bob Dixon, co-author of Morphographic Spelling, the Garden Hills school had a high percentage of low-income and single parents with children who were not learning and showed many problem behaviors. When Phyllis was made principal, she instituted a program based on systematic use of behavior principles and Direct Instruction to provide consistent management and effective instruction throughout the school. Through visits to other schools, workshops, and insertive training, her teachers learned to implement a full range of DI programs and to focus on student progress as a primary guide to action. Parents became very involved in the school as they saw the changes. Almost every one attended PTA, and although poor, they raised money to help meet school needs. Parents also became strong supporters of the program at School Board meetings when the program was in jeopardy.

Although the Garden Hills students were well below district averages when the new program began (with expected performances in the 30th to 40th percentile range based on socioeconomic variables), they showed gains averaging 5 grade equivalents from September 1980 to 1983, with most grades averaging above grade level in 1983. They were above district wide-averages in 1985 in first grade reading, math, and language. At other grade levels they were close to or above national norms and above their predicted scores by an average of 15 percentiles.

These improvements are truly significant and are directly attributable to the leadership efforts made by Phyllis Wilken in training and supporting her teachers. She was always available, night or day, to deal with problems. She was involved and a leader concerned with what was best for kids. She is most deserving recipient of the ADI Award for Excellence in Administration.

Excellence in Teaching

The ADI Excellence in Education Award for Teaching was given to Rita Colton of San Diego, California. The presentation was made by Phyllis Haddox. I quote from her presentation.

I first learned that Rita in the Fall of 1978 when she was a resource teacher for the San Diego Fellows Through Project. I was the project manager representing the University of Oregon. Rita was assigned to assist me in the first training session in Distar Reading with teachers who had just learned that they had to change what they were doing. They were not happy. I saw that first day many attitudes that make Rita an excellent teacher—quick competence and persistence even under adverse circumstances.

During the five years that I was directly involved in working with San Diego, there were many times Rita took a difficult stand to protect the Program against forces in the District against the

The Camden NJ Direct Instruction Project 1984-85

By George Brest

Glasbuck State College
Nicholas DiOttida
Glasbuck State College
Florence Casvin
Camden Public Schools

This report describes the rationale for the Camden Direct Instruction project and two studies that were completed by the project during the Fall of the year. The first study concerns the improvement of reading instruction. The second study concerns the use of Direct Instruction in "transitional classrooms.

Rationale: Choice of Intervention Strategy

Prior to 1979, behaviorally based improvement efforts in Camden, New Jersey had focused on changing teacher behaviors in classrooms that used a traditional, basal-dominated, instructional model. Adding systematic reinforcement techniques and precision teaching (Brent, 1977) to these classrooms helped accelerate student learning in a few areas, but appeared to have only minor effects on total student learning. It seemed that if the curriculum could be directly modified, student improvement would be much greater. But how to modify the curriculum significantly in a manner that was locally acceptable was not known.

Finally in 1978, Direct Instruction materials began to be used in an attempt to change the curriculum. The Direct Instruction materials and accompanying classroom management and teacher presentation techniques brought a promising systematic instructional program to Camden.

The choice of Direct Instruction to improve student learning was a difficult one to make since it is an intact system that forces many changes in traditional classroom practices (Gage, 1980). When new instructional materials are introduced to the classrooms, teachers must become familiar with the materials and learn the teacher presentation and classroom management skills that are specific to the new system (Siegel, 1979). New instructional materials can be key to change, if they substitute materials proven to be effective for the traditionally used basals, but the content must be presented well if it is to reach the students.

The majority of instructional materials are often poorly designed (Collins, 1983; Engelman, 1983; Silbert, Carnine & Stein, 1981; Holland 1976) and rarely tested (Coll, 1981). Direct Instruction materials, on the other hand, have a clearly defined set of principles governing the construction and teaching procedures. Characteristics include specifying objectives, analyzing the objectives into teachable components, identifying preskills, selecting examples and sequencing examples (Becker & Carnine, 1980). The programs also feature small student-teacher ratios (direct initial teaching), teacher-directed group instruction, signal systems, positive reinforcement, immediate corrective feedback, and extensive teacher training. The materials are highly structured scripts for the teachers and include a careful selection of examples for the pupils. Direct Instruction has been field-tested extensively and proven effective (Cotton & Snavely, 1981).

The Direct Instruction system began in the early '70s (Becker, Engelman, Carnine & Magg, 1981). The most comprehensive use has been in the Follow Through Project. Here Direct Instruction has been used to teach reading, language, and mathematics to K-2 students. This application has been fully described and extensively evaluated. The Direct Instruction Follow Through Model provided the basis for the Camden Project. Due to a lack of resources, however, Camden has not fully replicated the DI Follow Through Model. Despite this deficiency, the Camden Direct Instruction Project has been able to achieve dramatic results. The discrepancies between the DI Follow Through Model and Camden's replication suggest that the level of pupil achievement reported in this paper can still be improved.

Reading Improvement Study

The Direct Instruction Reading Mastery basal series was used in a small number of elementary classrooms in grades 3-5. It was primarily used with small groups of low achievers. This analysis is based on data from the second grade students, since reading testing is begun at this grade level. Also,

Continued on Page 2

Continued on Page 4
Atlantic Coast DI Conference

By George A. Smith and Ed Shuster

Nanuet, Delaware

The First Annual Atlantic Coast Confer- ence on Effective Teaching and Direct Instruction was a resounding success. Over 200 registrants participated in the four-day conference held July 7-10 in Delaware's Lewes-Rehoboth resort area. The keynote speaker, Jean Osborn, was included by other nationally known presenters such as Geoff Colvin and Bob Dixon. Regionally-known presenters in- cluded Jane Feilberg, Paul McKinney, Will Proctor, Ed Schaefer, and George Smith. Also contributing to the success of the conference were Dee Patterson and Carl Hallom of Delaware's Depart- ment of Public Instruction. Without the help and support of these two individuals this conference would not have been a reality.

Thirteen workshops provided information and training on effective teach- ing programs and strategies for: (a) teaching reading, language, math, and spelling to handicapped and non-handicapped students at all levels; (b) organizing and managing elementary and secondary classrooms; (c) adopting effective reading programs; (d) teaching, and managing very low-performing and/or non-compliant students; (e) utilizing computers and associated technology; and (f) choosing, supervising, and ad- ministering effective teaching programs. The Second Atlantic Coast DI Con- ference has been scheduled for July 14-17, 1986. Be on the lookout for the announcement in ADI News and come on over for some sun, surf, and Direct Instruction.

Annual ADI Treasurer's Report

By Wes Beeker

This report is based on our financial status as of December 31, 1984.

INCOME

1. Memberships and subscriptions
   a. Sustaining members $31
   b. Regular members 475
   c. Student members 82
   d. News only 808
   e. SRA News only 837
   SUBTOTAL 1632 $32,624
2. Book sales— Gross income $10,083
3. Advertising $1,936
4. ADI Conference 1984 $35,595
5. Handicapped Learners Preschool $108,897
6. Summer school for 6-13 probable kids $5,000
7. Other $1,339
TOTAL INCOME $175,974

EXPENSES

Since our bookkeeping breaks ex- pense down by categories needed for our tax reports, I will not detail that, but rather show some activities earned money and lost money. Our total expenses were $178,242. Thus, there was a net loss of $5,268 for the year.

1. The net income from book sales of approximately $1,900, along with adver- tising income, and membership income are the resources we balance against the

Rita Colton

Rita had very positive influences on the teachers, aides, and children she worked with. Students who started out not speaking English often achieved grade-level performances and felt good about themselves. Teachers and aides felt more competent because they were. Rita has had a strong influence on how teaching and teaching training is conceptualized in the district—firm, specific, sometimes critical, but always constructive and usually positive.

Last year, when Follow Through funding was reduced again, Rita volun- teered to take a classroom. (The two other original resource teachers had already taken administrative positions.) She is back with the children and pro- vides a beautiful model of excellence and ethical practice. I am proud to have had Rita Colton as a colleague and as a friend. Excellence in Supervision The ADI Excellence in Supervision Award was given to Jean Robbins from Kotzebue, Alaska. Jean's friends in Alaska put together a powerful set of documents describing all of her ac- complishments. The award was presented by Randy Sprick, ADI President, who said in part:

"One reason for giving this award to Jean Robbins is in response to the great ef- forts some people who work with Jean went to in telling us of her worth. They put together letters from superintendents of districts where Jean has trained, from community members talking about Jean's commitment to community ser- vice, from State Department of Educa- tion staff, from other trainers in the district, from parents where Jean sup-ervised, and from aides and teachers supervised by Jean. In all the documentation that was provided, it was clear that these are not just people who have a professional commitment to Jean Robbins, but people who have a great deal of love for her."

Jean organized the training, manage- ment, and monitoring for the Northwest Arctic School District. She helped to design adaptations of programs that were necessary for bi-cultural students. Peggy Peterson, a DI supervisor in Denver, writes: "Jean had the knowledge base of the unique problems of staff and students, plus incredible insight into direct in- struction, and came up with one of the best DI sites that I have worked with. I have worked in 40 of our states and Jean is at the top of the dynamic dozen, as I call them. Jean has spent hours and hours and money for DI programs. She keeps her skills up to date. She brings in Consul- tants to solve specific problems. She sees that teachers and staff are rewarded for good teaching. She knows that all the materials are there (no easy task because of her remote location). There is no other teacher that I know that deserves the ADI Excellence Award."

Our best to a great leader and person! Rest in peace. Be thinking of your nomina- tions for next year.

DIAD Annual Awards

Continued from Page 1

Project. She often jeopardized her own position (all 90 pounds) fighting for her ideal of excellence—to ensure that the children had the best possible instruc- tion.

RITA COLTON

ADI EUGENE CONFERENCE

1986 AUG. 4-8

JAN ROBB

Treasurer's Report

Continued from 2nd col. above

cost of developing and publishing the ADI NEWS. We ended the year with a $2700 loss in this area.

2. The ADI Conference showed a "profit" of approximately $3000.

3. The Handicapped Learners Preschool showed a loss of about $3000. (The "Other expenses" above was from donations to support this school and is included in the balance.)

4. The Summer School for problem kids was a break-even affair.

We ended the year with assets (money and book inventory) of approxi- mately $54,000. This gives us a secure base from which to contract for further training of DI teachers and to set up con- ference commitments.

The Direct Instruction News is published Fall, Winter, Spring and Summer, and is distributed by mail to members of the Association for Direct Instruction. Readers are invited to submit articles for publication relating to DI. Send contributions to: The Association for Direct Instruction, P.O. Box 10252, Eugene, OR 97440. Copyrighted by ADI 1985. Editor: Wes Beeker

Associate Editors for Research: Ed Kammermey Russell Garson Craig Darch Robert H. Homer

Departments

Teacher-to-Teacher Administrator's Briefing
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Analytical Curricula... Linda Meyer
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2 DIRECT INSTRUCTION NEWS, FALL, 1985
A Report from Sydney, Australia

Teaching English as a Second Language with DI

By Kerry Giuiliemi and Joseph Aboud

Catholic College of Education
Sydney, Australia

Educators agree that children of non-English speaking background need to master English better. For example, in an article on "core curricular" Msgrave (1981) asserted that migrant children in Australia must learn English to exercise their democratic rights and to develop interpersonal relations thus with E.S.L. programs. While teachers may have no difficulty in agreeing with such statements, difficulties do exist in teaching so that students from non-English speaking backgrounds actually master English at the complex levels required.

Concluding their analysis of the relatively poor performance of migrant students in reading and numeracy Bourke and Leith-Ross (1984) suggested that "more assistance" and "special assistance" must be given to migrant students "in order that they develop skills appropriate for their level of development".

The solution of what kinds of "assistance" in terms of teaching procedures, programs and skills that enable migrant students to reach appropriate levels of academic performance have only been generally answered for class teachers.

Kenny (1980) reported that the general consensus among Australian school teachers, situations, as well as situational methods of teaching English as a second language to migrant children, despite the fact that such programs have not been systematically evaluated.

The Sydney Catholic Education Office recommends a functional approach to E.S.L. teaching. The approach emphasizes:

1. The use of language appropriate to the occasion.
2. Motivation through success, i.e., children first learn language that is most relevant to their personal needs.
3. Progressive language as well as productive language in that children are exposed to language which contains unfamiliar words and is applicable to a situation. (E.S.L. Guide, 1981:12).

Children are to be given experiences and activities where they can use different forms of language according to their function. It is not a structured approach that relies on teachers formulating a programme based on the children practising language used in common situations, as well as situational experiences to develop language competency. Such experiences include games, activities, role playing, riddles and collections of pictures, words etc.

Similarly, the recent New South Wales Department of Education (1983) E.S.L. support document states that language learning is most effective when students are motivated by a need to communicate within a meaningful context. Communicative approaches to language teaching are recommended and teachers are encouraged to consider excursions, field trips, local community organizations and role play to allow students to develop language.

Siegler's (1975, 1980, 1984) "naming" of the language approach to the problem of language and intellectual skills of students traditionally classified as severely retarded (Maggis & Morath, 1975); moderately mentally retarded (Green & Maggs, 1980); Down's Syndrome (Ciarni-Ross, 1979); neurologically impaired (Maggs et al., 1980); disadvantaged (Maggs & Moore, 1978; 1969) and regular (Maggs, 1977).

One Australian study investigated the effects of the Distar Language Program with non-English speaking Greek, Yugoslavian, and Lebanese children compared to a standard program of E.S.L. instruction. The design used was the quasi-experimental non-equivalent control group design; children were pre- and post-tested on the Colombo/Ravens Progressive Matrices, Peabody Picture Vocabulary Test, Assessment of Children's Language, and a version of the Boston Test of Basic Concepts, Dailey Language Facility Test and the Baldec Language Ability Test. The data were analyzed using a repeated measure (2 x 2 factorial) analysis of variance followed by t-tests for significant differences between experimental and control group means. After 12 weeks of instruction the children in the experimental group (Distar Language) had made significantly greater gains than the control group (E.S.L. program) on eight of the eleven dependent variables (morphology, syntax, concept development, and measures of expressive language Kenny, 1980).

Recent research on classroom practice clearly does not support the effectiveness of non-structured language teaching in increasing student language outcomes as measured by standardized measures of language competence. Whether such approaches enhance language development in ways not assessed by these measures is both a logical and yet to be evaluated empirical question. Logically, one would have to defend an argument that language experience approaches enhance development of aspects of language that are covered in measures of intelligence, concept development, expressive and receptive language and linguistic processes (such as morphology, syntax, semantics). Such an argument has yet to be empirically proven.

Research on the effectiveness of Direct Instruction also challenges the notion that different sub-sets of learners need unique and preferred teaching approaches. Rather, the picture emerging from the facts is that teachers can select appropriate approaches. Indeed, instead of focusing on variables such as ethnicity and first language teachers should focus on the variables that are controlled in the methodology of language instruction and classroom practice.

The quasi-experimental design of much of the classroom-based research needs to be refined in order to demonstrate the effectiveness of Direct Instruction. Hence, the purposes of this study were to examine further the questions:

1. The relative effectiveness of a structured approach to teaching early English language skills development.
2. The generalizability of a structured approach to teaching English language skills to children of non-English speaking background.

Method

Subjects
The present study involved 63 migrant children of Lebanese, Egyptian, Portuguese and Vietnamese origin in two of three Kindergarten classes. Over 90% of each class are children whose parents were born in non-English speaking countries. The children came from working class backgrounds and attended an inner-city school located in the Disadvantaged Schools programme.

The students were not randomly assigned but were placed in the group at the beginning of the year by administration staff. This was done according to alphabetical listing, whereby all children in Kindergarten were placed in alphabetical order, and the number in each alphabet position was determined evenly and placed in each class, e.g., if there were 8 children with surnames beginning with 'A' would be placed in each class.

Design

The design used during the study was the non-equivalent control group design. The two classes used in the study were pre-tested using the Macquarie University Special Education Centre (MUSEC) Basic Language Concepts Screening Test. One class was used as a control group and followed a language programme developed by the class teacher based on Catholic Education Office and Education Department guidelines and in-service course training. The second class was the experimental group and received language instruction by the class teacher using Distar Language 1. At the end of 20 weeks of instruction each class was post-tested with the same MUSEC Basic Language Concepts Test.

Materials

The programme implemented with the control group consisted of a variety of materials including games, puzzles, teacher-made worksheets and pre-reading activities. In the experimental group children used the Distar Language program with the whole group for 10 minutes. The children were then given various activities to complete in order to provide time for what was discussed. These activities included: classifying, "picture talks", colouring, cutting, sequencing pictures, identifying, and discrimination activities. Some children received small group instruction while others worked individually with the whole group for 10 minutes. The children were then given various activities to complete in order to provide time for what was discussed. These activities included: classifying, "picture talks", colouring, cutting, sequencing pictures, identifying, and discrimination activities. Some children received small group instruction while others worked individually. The programme relied heavily on a discussion of the topics based on children's experiences and providing appropriate situations to practice concepts being taught.

The children were encouraged to verbalize, use simplified language and were taught the meanings of concepts such as "under/over; top/bottom; Continued on Page 5
the number of students involved in Direct Instruction is a large enough sample to study using conventional statistical techniques.

The grade 2 experimental students consisted of two distinct groups. One group had received instruction in Reading Mastery in grades 1 and 2 from an inexperienced Direct Instruction teacher. The teachers were using Direct Instruction for the first time. The other group received instruction from experienced Direct Instruction teachers in both grade 1 and grade 2. The teachers had used Direct Instruction for more than one year. All the students in the control group were in classrooms with experienced traditional teachers. The experienced teacher DI group had 32 students and the DI group had 26, and the two traditional groups had 33 and 39 pupils.

All Reading Mastery teachers received a training workshop prior to using the program and several on-site clinical supervision visits.

Results
Students in the second grade were routinely tested in October and April with the Comprehensive Test of Basic Skills (Level D, Form U). The test provided four scores related to reading instruction. They were Word Attack, Vocabulary, Comprehension, and Total Reading. Scale scores were chosen as the unit of analysis. The test scores from the April administration were analyzed using the October scores as a covariate. A separate 3 x 3 (treatment by years by years of reading, Teaching Mastery) analysis of covariance was used for each of the four measures. With 3 and 120 degrees of freedom the F value needed for significance at the .05 level is 3.92.

Each of the four measures yielded significant differences in the two main effects and significant interactions. The Reading Mastery treatment was higher than the 3rd and 120th degree of freedom of the F value needed for significance at the .05 level is 3.92.

The results of the four measures yielded significant differences in the two main effects and significant interactions. The Reading Mastery treatment was higher than the 3rd and 120th degree of freedom of the F value needed for significance at the .05 level is 3.92.

INSTRUCTIONAL MATERIALS
The instructional materials used for the transitional class are as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>SRA Reading Mastery</td>
</tr>
<tr>
<td>Arithmetic</td>
<td>SRA Distar Arithmetic</td>
</tr>
<tr>
<td>Language</td>
<td>SRA Distar Language</td>
</tr>
<tr>
<td>Pemanship</td>
<td>Zaner-Bloser Pemanship</td>
</tr>
<tr>
<td>Social Studies</td>
<td>Unit Study (Curriculum Guide)</td>
</tr>
<tr>
<td>Science</td>
<td>Unit Study (Curriculum Guide)</td>
</tr>
<tr>
<td>Health</td>
<td>Elementary Health Guide</td>
</tr>
<tr>
<td>P/E/Motor Skills</td>
<td>Elementary Motor Skill Development Handbook</td>
</tr>
</tbody>
</table>

Art and music are integrated with other disciplines.

This program of instruction for the experienced teacher group was designed to meet the needs of students who experience developmental lag and/or maturational lag. Because their development is progressing at slower than normal pace, they are unable to master a predetermined set of skills necessary for promotion. These students require additional time to acquire specific learning tasks.

Table 2

<table>
<thead>
<tr>
<th>Table 2: Daily Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-8:40</td>
</tr>
<tr>
<td>Pupil Preparatory Period</td>
</tr>
<tr>
<td>8:40-8:45</td>
</tr>
<tr>
<td>Opening Exercises</td>
</tr>
<tr>
<td>8:45-9:15</td>
</tr>
<tr>
<td>Reading Mastery - Group I</td>
</tr>
<tr>
<td>9:15-9:45</td>
</tr>
<tr>
<td>Reading Mastery - Group III</td>
</tr>
<tr>
<td>9:45-10:15</td>
</tr>
<tr>
<td>Reading Mastery - Group II</td>
</tr>
<tr>
<td>10:10-10:30</td>
</tr>
<tr>
<td>Reces and P.E. (Motor Skills)</td>
</tr>
<tr>
<td>10:30-10:50</td>
</tr>
<tr>
<td>Pemanship</td>
</tr>
<tr>
<td>10:50-10:50</td>
</tr>
<tr>
<td>Distar Arithmetic</td>
</tr>
<tr>
<td>11:00-11:00</td>
</tr>
<tr>
<td>Preparation for Dismissal</td>
</tr>
<tr>
<td>11:00-11:30</td>
</tr>
<tr>
<td>Reading Mastery (all groups)</td>
</tr>
<tr>
<td>12:00-12:30</td>
</tr>
<tr>
<td>Reces and P.E. (Motor Skills)</td>
</tr>
<tr>
<td>12:30-1:00</td>
</tr>
<tr>
<td>Distar Language</td>
</tr>
<tr>
<td>1:00-1:30</td>
</tr>
<tr>
<td>Unit Study (Sciences, Social Studies, Art, Music and Fire Prevention)</td>
</tr>
<tr>
<td>1:30-2:00</td>
</tr>
</tbody>
</table>

Results
Table 3 illustrates the promotion data for the identified low achievers. In the transitional class, 78% of the students were promoted. None of the low achieving students from the control classrooms were promoted. Although a true experimental study was not conducted, the results are so dramatic that the school system can say that the transitional class model is an unqualified success.

Discussion
The two studies in this report used Direct Instruction, a well-tested instructional system. The results were expected in Camden if the Direct Instruction programs were actually taught, i.e., taught as well as in the situations in which the programs were originally validated.

Continued from Page 1
As discussed above, Camden approached, but did not meet, the standards set by Follow Through. The student data correlate with the quality of the application. When the Follow Through standards are approached, student scores are high. For example, student achievement with experienced Direct Instruction teachers was superior to the achievement with inexperienced Direct Instruction teachers. More precise measures of teacher performance than years of experience are available (Gentile & Carlin, 1982) but were beyond the resources of this project.

Recommendations

This report, last year's report (Brent & DiSibilia, 1984) and published reports on Direct Instruction lead to the conclusion that for Camden, Direct Instruction is a system that accelerates elementary student skill acquisition in reading. The system works if the Follow Through implementation standards are met or at least approached. It works if used as intended.

The major reason for the success of the Direct Instruction system, in combination with the traditional, is the use of instructional materials that are developed in accordance with effective design principles (Becker et al., 1982). In other words, traditional workbooks are replaced with superior instructional materials. In addition, compatible and effective teacher presentation skills and classroom management practices must be used proficiently to achieve superior results. The outcome of the present study indicates that student achievement is higher with teachers who are more experienced with Direct Instruction.

Additional studies in Camden that compare Direct Instruction to traditional approaches are not needed if resources are limited. Camden resources would be better used to insure that the Direct Instruction classes meet, and then maintain, the Follow Through standards. Of primary concern are the following conditions:

1. Provide continued assistance to teachers so that they can reach proficiency levels in teaching Direct Instruction programs. With adequate training and supervision, teachers should reach proficiency in two years (Gentile & Carlin, 1982) and then continue. Student instruction materials provide a clear demonstration of concepts, but these are lost if they do not reach the students.

2. Allow students to have a several consecutive years of Direct Instruction. Students starting Direct Instruction in kindergarten have an advantage that is reflected in later gains. Dillow (1980) reports that his students who have been taught the program for 30 minutes daily. Once differences between the three groups reduced, these were combined and the class taught as a whole for the remaining 12 weeks. A total of 120 of the 160 lessons in the program were taught.

The group used materials contained in Distar Language 1. This involved using the presentation books (A, B) during the group work, the Story Book, and Take Home Book (1 used at school as a written activity at the end of appropriate lessons). Concepts covered during this study were included in Lesson 1 to 120. They were object identification: properties (on, over, in front of), tenses (past, present and future); colors (e.g. full and not, plus, classification and location (e.g. days of the week, months of the year); concept application (generalized examples of concepts taught).

The language test used was MUSEC Basic Language Concepts Screening Test. This test contains 94 items which test a range of objects, covering size (e.g., big, wide, long, tall, widest, narrowest, short, small); position and location (e.g., upside-down, closest, centre, under, over, front, bent, before, below); quantity (e.g., some, few, half, whole, volume (e.g., full, empty, more, less); mass (e.g., heavy, light); temperature (hot, cool) and sets (not, alike, different). The MUSEC Basic Language Concepts Screening Test is not a standardized test and no reliability information was given. Therefore, the Kuder-Richardson formula 21 (KR-21) reliability formula was used to measure the reliability of both pretest (reliability 0.9) and posttest (0.8).

Results

Table 1 presents means and standard deviations of pretest and posttest scores on the experimental and control groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group N</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Experimental</td>
<td>32.40</td>
<td>57.40</td>
</tr>
<tr>
<td>Control</td>
<td>32.40</td>
<td>57.40</td>
</tr>
</tbody>
</table>

The descriptive statistics in Table 1 show the mean differences between the experimental and control groups at the time of pretesting on the dependent variable. The results indicate that the differences are large and suggest a considerable spread of performance on the 04 item. The posttest standard deviation values are quite low and suggest that the treatment was effective and substantially to reduce differences between students in terms of the language. In order to test for significant differences between the gains made by the two groups, residualized gain scores were calculated using an SPSS program, Regression (Nie et al., 1975). The data were assumed to be in an ordinal scale and the Wald-Wolffowitz non-parametric test for differences between groups was used (Wolff & Nie, 1981; Siegel, 1956). The resultant value of z (2.4119) has a probability of .008 and favoured the experimental group.

Discussion

The results of this study show that students taught by the Direct Instruction Distar Language 1 program demonstrated superior concept learning outcomes to students exposed to a more traditional program. The development and use of ELS programs is motivated by a belief that non-English speaking children need a language acquisition approach. The results of this study do not support such a belief—at least not for the language skills taught to young migrant children. Both the experimental and control groups programs successfully reduced differences between student language performance, and showed gains in concepts development. Reducing differences between student learning outcomes, while also increasing such outcomes, is an understandable achievement especially for young naive language learners.

The findings of the study concur with those of Kenny (1980). Using a similar design Kenny assigned 32 non-English speaking kindergarten students to either an experimental group (30 minutes per day of Distar Language 3) or a control group (30 minutes per day of the Tate "Oral English" Course). After 27 weeks of instruction the experimental group scored significantly higher on tests of Morphology and Syntax (Balite Language Test), memory (Assessment of Children's Language Comprehension Test), and the Star Test of Basic Concepts. Results of this study are not definitive of the value of Direct Instruction but imply the potential of results from quasi-experimental research apply here. Two more studies are needed. The research plans are: (1) the use of one dependent variable and (2) lack of adequate descriptions of process variables.

One dependent variable (MUSEC Basic Language Concepts Screening Test) was used in this study. This decision was defensible in that the teachers chose not to add so the remediation of children in their first five days of schooling (and to the resitator demands on teachers) by assessing them on a large battery of tests. The test is valid in terms of the emphasis on concept development in both teaching approaches, but is not sensitive to other aspects of language development. For example the study does not present objective data on subjects' development in class and other school settings.

Continued on Page 7
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A Cognitive Training Curriculum
Teaching Positive Mental Health Rules
By Thomas R. Bingham, M.S.

Let your mind wander back to when you were in the fourth grade. Try to recall when you were called "Fatty" or "Chicken" or some other snide name. Or recall how you felt when you were afraid of doing something you didn't do. How did you react to your worry about a test or thinking about giving a speech? How do you respond to eves with these same rules, as we now, as an adult?

Albert Ellis, the originator of Rational Emotional Therapy, pointed out a number of these rules.

"Today, after inquiring eyesglasses, radar, electronic calculators, and other perceivers moving thinking aids, the man rules supreme on this earth and is literally seeking other worlds to conquer. Only in the emotional area man has yet as made remarkably few advan-

in, a spite of amazing progress in other areas, he is not so improperly more emotionally stable, and, happy than he was in past centuries, in de-

deerly, and even in some ways, emotionally uncontrolled, and mentally ill than ever."

(p. 18)

A common approach to helping people with emotional problems is to do psychotherapy with them. Apparently believing that psychiatry is better than cure, a novel of recent authors have written curriculum materials to be used in schools, but still, the general heading of "affectional education." Of the alternative materials available to them, readers of DJ News may particularly like the Program for Affective Learning (PAL) reviewed here because, first, it appears to be a very good pro-
gram, and second it may very well be the only affective education program ever written utilizing direct instruction technology.

In the teacher's guide accompanying PAL, Thomas Bingham, its author, acknowledges that Albert Ellis, the creator of Rational Emotional Therapy (RETh), is a major influence. Much of the content of PAL seems closely related to a few of Ellis's famous "irrational" beliefs or assumptions.

1. The idea that it is a sine necessity to be loved or approved by virtually everyone.

2. The idea that you should be thoroughly competent, adequate, and achieving in all possible respects if you are to consider yourself worthwhile.

3. The idea that certain people (including you) are bad or wicked, and that they should be severely blamed or punished for their deeds.

4. The idea that your unhappiness is externally caused, and that you have little or no ability to control your sorrows or distresses.

PAL has a number of lessons themes related to each of Ellis beliefs. For example, there is a lesson that needs to be loved and approved of, PAL includes lessons on "Coping with not being liked," "Coping with Convictions," "Coping with Being Called Names," etc. PAL's content, with any problem, is determined, of course, by your theory of what causes it. PAL's therapeutic

A DI Program for Affective Learning (PAL) Information on process variables would contribute answers to questions such as the amount of group versus individual instruction, the amount of peer and professional feedback, use of performance objectives, use of corrective procedures, or whether not some concepts needed more examples and generalization. Each lesson is scheduled for daily language instruction and much of the task was student self-paced engaged escape (TIE) amount of academic engaged time differ between programs and within programs.

More extensive information on these variables and those relating to instructional design (sequencing of examples within concepts, across concepts, inductive and deductive strategies, observational review of learning, use of a behaviorist-vigent approach) would contribute to teachers' understanding of alternative variances (Bloom, 1980) and hence lead to more effective instruction.

This study adds to the considerable body of research which emphasizes the role of structured programs in increasing student's achievement in language and related academic skills. Special and contemporary preferences for non-structured, experiential instructional approaches in these areas are yet to be empirically verified. Additionally, the goal of this and other studies of Direct Instruction are language programs suggest that persistent attempts to identify subjects of learners in terms of ethnic and social background are regarded, in the assumption that they need unique and preferred instructional programs may be in vain. It may be that one approach in terms of increasing non-English speaking students' mastery of English comprehension and use to implement more generalizable instructional approaches that enhance the learning of all students.

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tement of Down Syndrome Infants and Young Children. The Journal of Special Education. 13, 3, 72-79.


Editor's note. I have planned to do a review jointly with Dr. Kanesue. This review is well known for his work in Rational Emotional Therapy. After reading his review I see a need to add only three notes. First, Tom Bingham does use Direct Instruction strategies that would be familiar to DI teachers. Second, I would like to see someone do some research with his revised program when it comes out. And third, Tom indicates that he is best published on his revision and that those of you interested in his program should contact him at 1921. Ella Drive, Albam-

ESL in Sydney

Continued from Page 5

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Core Concepts uses Videodisc Technology

What Can Videodiscs Do?

By Nancy Burdick
Systems Impact Inc.

Editor's note. This article describes the program design and teaching tools that are available now or will be possible by videodisc players. A companion article on Mastering Fractions which follows this one describes the application of this technology to teaching fractions.

A new series of products being developed by Systems Impact, Inc. addresses the problem of integrating basic concepts into the ongoing curriculum. "Core Concepts in Science and Mathematics" is designed to provide educational institutions with a contemporary curriculum focused on the teaching of basic concepts.

This series combines sound instructional design with the power of videodisc technology. The most ambitious undertaking of its kind to date, "Core Concepts" will eventually include as many as 30 videodiscs covering virtually the entire secondary school curriculum. Videodisc, laboratory simulations and print materials will all be integrated to provide a comprehensive instructional program that can be taught by a teacher or in a self-instructional mode.

Each concept is taught within a modular structure that allows students to learn at their own pace. The teaching program uses visual images, animations, simulations, and other media to teach the concepts.

The multimedia approach provides a flexible and powerful learning environment that allows students to learn at their own pace.

Instructional Design

Mastering Fractions is structured according to direct instruction principles which have consistently generated effective programs.

These principles are reflected in the following:

A. STUDENTS ARE TAUGHT EXACT-PLATY STRATEGIES FOR WORKING WITH A COMPLETE SET OF FRACTIONS EXERCISES. These strategies require students to apply skills learned in one fraction to the next in a series. These strategies make up a strategy and are taught in isolation before being linked. Students learn to translate the individual skills, how to link skills together, and then apply the strategy to the new lesson.

B. DURING EACH LESSON MORE THAN ONE SKILL IS TAUGHT OR REVISITED. Students are taught in more than one lesson, and more than one skill is taught in each lesson.

C. CONCEPTS ARE CONTINUOUSLY AND SIMULTANEOUSLY REVIEWED. Once a concept is taught, it is used by the students continuously.

D. THE AMOUNT OF PROMPTING STUDENTS RECEIVE FOR EACH CONCEPT OR SKILL IS PROGRESSIVELY DIMINISHED. The instructor introduces new concepts to students through a series of prompts that gradually decrease in complexity.

E. NEXT, STUDENTS ARE WRITTEN PROBLEMS. First, students work problems at a time with feedback on each step. Then students work entire problems. All the problems presented are of the same type, requiring the same operational steps. During the more structured examples.

F. ON PROGRAM LINES, REVIEW AND HOMEWORK ASSIGNMENTS PRESENT THE NEWLY TAUGHT PROBLEMS IN THE CONTEXT OF OTHER FAMILIAR PROBLEMS THAT REQUIRE DIFFERENT OPERATIONS. For example, after students learn how to add fractions, problems like \( \frac{2}{3} + \frac{2}{3} \) are put in the same "set" as problems like \( \frac{1}{3} + \frac{1}{3} \).

G. REMEDIATION DESIGN OF THE PROMPTS PERMITS PRECISE DIAGNOSIS OF STUDENT PROBLEMS. The easiest tasks require oral responses and feedback on problems that the student is having trouble with; a remedy is immediately implied: repeat the demonstration and the subsequent oral questions.

If students are still at a (matryoshka)湾式 presentation but have trouble with the problems in the following exercises, it is implied: give feedback on problems that the student work independently, but continue to present independent problems at the same rate.

If students have mastered the oral responses and the independent problems that are presented immediately after the highly structured presentation, but have the same problem presented again, they appear in "nested blocks," a third remedy is implied: provide feedback on the process, within the context of all other problems.

Why Videodiscs?

The videodisc format permits the full range of instructional possibilities that have not been achieved with other teaching formats. The videodisc program incorporates the advantages of video presentations, print programs and videotape sequences while avoiding the difficulties often associated with these technologies.

Microcomputer programs have a potential advantage of being interactive." Translated into instructional terms, "interactive" means that the program can respond to student mistakes, patiently present corrections, and possibly present additional problems of the same type missed by the student. The problem with computer programs is their difficulty in using print materials to test the student's understanding and awareness. The "pacing" of the presentation may be very poor; the responses called for may be weak (eliciting correct responses in the case of the answer), and the diagnosis of mistakes may not be precise (because the student does not have the opportunity of accurately reading what is on the screen).

Another approach to computer programs is the videodisc program, which is generally limited by the display capacity of the computer, which means that the timing of "feedback" or "movement" on the screen is often crude. A videodisc program is capable of doing an excellent job with some details of the presentation that are not handled well by a microcomputer program. The videodisc software is capable of displaying the visual, dynamically, and with good pacing, it can talk to the student and present the important points in a logical and in writing, and thereby guarantee that the message received by the learner is consistent with what is seen on the screen.

The major problem with the videodisc program is that its interactive capabilities are very limited. The program may have trouble presenting "still frames" and permitting students to work problems during the video presentation. Also, branches that present additional
work or "corrections" are not easily accessed (or constructed).

The Videotape programs provide the best features of a good microcomputer program and a good "blackboard" presentation: "loops" or "branches" of the well-designed microcomputer program. They also have a high content-to-feedback ratio of feedback on student responses. By using these features the teacher may adjust the amount and type of practice to the performance of the students.

The Core Concepts videotape programs also have the communication features of a videotape program—oral and written messages combined and worded in a realistic form that graphically compelling and well-timed. The result is a fast-paced presentation with questions and responses, with sequences that allow as well as tell, and with contingent student's "fault" and the righting of drill-and-practice tasks necessary to bring students of varying ability to mastery.

Development of the Program

A well-designed program takes into account the nature of the skills that are to be taught (the "content") and the students. The only way to discover facts about the students is to work with them and observe their problems. The development of Mastering Fractions involved seven different versions of the program, each modified on the basis of intensive formative evaluation of the program in the classroom. The revisions of the program came about from problems that teachers experienced in using the program. The testing, and problems that students experienced.
The final program works well because it is designed to test the theory of the typical student. Two points are very important about this profile: The first is that the students have a variety of math concepts and skills deficiencies. The second is that these problems are not the students have, but are the way the students learn the skills. Here is a list of the typical behaviors exhibited by many incoming students:

- Students do not follow instructions, even instructions that are very clear and simple.
- Students do not attend to details. Quite commonly, students leave out important steps in the solving of problems from the board or screen.
- Students often generalize spuriously. If they see a formula that works on one or two fractions, the students will often try to "generalize" the operation to all fraction problems that are presented, including those that involve addition and subtraction.
- Students attempt to invent short-cut rules or procedures for working problems, often basing these rules on only one or two examples and creating rules that are based on irrelevant details of the examples.
- Students have a great tendency to write the fraction problems in a way that favors the format of a home Pra-made version that works for only a few examples.
- Students have a full range of misconceptions about fractions.

Although the students may be able to perform on isolated fraction skills, they may have difficulty with the following.

a. Fractions are really less than one.
   b. The "one" that is referred to in connection with fractions is not really the same "one" referred to in the whole number context such as 1 = 1/6.
   c. Fractions are symmetrical, which means that 1/4 = 4/1.
   d. The logic of fraction operations is unrelated to the logic of whole number operations. Students may know that if you multiply a number by one, you get the same number. Many students may know that 1/2 = 2/1. But they may not understand that a number times one is equal.
   e. Final students may not have accurate writing and copying skills. In addition to possible errors in copying, such as errors in addition or multiplication errors, even though they are following the appropriate operations.

Anybody who has tried to teach typical students is familiar with their problems; however, it is very difficult to draw final conclusions, such as "the students cannot learn," or "they are incapable of generalizing," or "they have faulty memories," etc.

If we look at any problem students exhibit, we can trace it directly to how they were taught. For instance, the notion that fractions are really less than one arises from the fact that the fractions worked with in the third-grade were (less than), and so were many of the fractions worked with in the fourth-grade.

The strategy of trying to generate a rule based on one or two examples is exactly what many of these students have been taught through discovery-learning programs. The students' apparent inability to follow instructions is an outcome that has been soundly reinforced for years. They have received many demonstrations that the teacher talks for a while, and then tells them to do something. At that point, they raise their hands and then, if not in 26 of 10. The instructor shows them exactly what to do.

Similarly, the inability to "dissimulate" different problem types has been reinforced by the "spirular curriculum" of the elementary-grades textbooks and teaching objectives. Students have long since learned that if they are working on a particular skill, all problems will involve that skill. Later they'll work on a new skill and not use the earlier-taught skill for a long time.

To understand the student's problems and to understand that the student is not the cause of these problems (which means that there is nothing wrong with the student's neurology) implies that the focus should be on the teacher's instruction. Once something has been mislearned and practiced, rehearsing re-creating (or far more practice than initial) first-time teaching. The reason is that the instruction is not just simply putting a new skill into an empty place in the student's head. The instruction must first wipe out the old misunderstanding and then replace it with the new skill.

That is the bad news. The good news is that although the students may progress to find that their strategies are challenged by the new material), they are likely to become proficient. If the students are well-trained, the feedback is clear, and the standards of performance are non-negotiable.

In other words, with a program like Mastering Fractions teachers can prove to themselves that virtually all students can learn math and learn it well, including those students who are typically written off as ones who have "no aptitude." Teachers can change that "no aptitude" judgment to one that gives promise for the student's future options. And perhaps the best part is that it doesn't involve more work for the teacher. It does require them to do things differently. The teaching is different and so are the rules for how to work successfully. And, even though many of the sequence-related and testing variables have been controlled, the program cannot be effective without a teacher. The teacher must make independent diagnostic judgments, set standards, monitor progress, and reinforce programs that the teacher's skills will set and the rate at which the students move through the program.

Program Features Shaped by Student Tendencies

Mastering Fractions has provisions to correct the various study problems and logic problems typical students have.

Following Instructions

To develop careful attention to instructions, the program provides variations of instructions, and presents them at a relatively high rate. The high rate gives students feedback at a high rate. The instructions are verbal or written, and both verbal and written. An Instruction may tell students to "Copy the problem and begin to". Or it may tell them to "Copy the problem, rewrite the whole number as a fraction, and then stop." Or, "Copy the equation and complete it." The variety of instructions is controlled so that all students are exposed to the different instructions frequently; however, they don't predict what the next instruction will be.

Attention to Details

To counteract the students' naiveté about details, like signs, the instructions require the students to write and copy a number of problems during every lesson. Although some problems presented in their workbook do not require copying, many do. The reason is that students often do not attend to certain details unless they copy the problems. The students are often able to work problems in which they "fill in the blanks," but after successfully working more problems, they often make serious copying mistakes when they attempt to write the same problems. Copying is a skill, and coping them accurately, is a hidden curriculum that sharpens the students' attention to all of the details of the problems and operations. In addition, the copying practice increases mechanical proficiency.

Correcting Spurious Generalizations

The students' tendency to generalize specifically on the basis of a couple of examples (and often on the basis of an irrelevant detail) is counteracted by the frequent changes in the structure and content of the problems with more than one skill, which means that the students have to learn to switch back and forth, as well as look at their mistakes and attend to different details. Yet, the first operation does not "go away." A rule of thumb is that the more, the better, students have to develop a discrimination repertoire that permits them to deal with different structures and to see the generalizations that pertain to each.

Also, discrimination exercises are presented. For example, after students have been given problems involving multiplying fractions and whole numbers and others after they have learned to add and both, they are asked to add and subtract proper fractions and to see the differences between what is done when adding and what is done when multiplying. They are quickly taught that they must attend both to the same basic problems of an operation like addition, but that the differences are that, is the difference that the skills are learned well enough to serve as a foundation for subsequent skills.

Also, the explanations that are presented refer to the basic logic or analysis presented earlier. For example, when multiplying by fractions of 1, students are shown why the product is 1. The outcomes occur when numbers are multiplied by 1 are therefore the same as those obtained with fractions of 1.

The explanation of the concepts and basic steps are repeated frequently in the program, because they serve as building blocks for the more complicated skills. Also, the verbal questions the narrator presents help to keep these strategies from being reduced to automatic, unconscious operations that the learner performs.

The guiding principle for the presentation and review of strategies is: Only if the student understands the logic of fractions as degradable entities that can be translated into pictures, and as complex numbers, is the lesson in a good position to learn the more abstract operations that are presented in algebra and all higher levels. For more information contact Impact Inc., 420 MacArthur Blvd., N.W., Suite 204, Washington, D.C. 20007.

DIRECTOR INSTRUCTION NEWS, FALL, 1983
100 Ways to become an effective teacher based upon the latest information about effective schools. A complete guide to expanding your teaching competencies. Ready to use tests of basic skills competencies, (in)program tests, classroom management forms and techniques, teaching tools and strategies, and homework plans, etc. Written by two teachers with over 35 years of classroom teaching experience. A must for the effective teacher.

(3 ring notebook --over 500 pages)

(Kindergarten through sixth grade.)
Transforming Teacher Resilience into a Commitment to Innovation

By Russell Gersten
University of Oregon
Thomas R. Guskey
University of Kentucky

In recent years an increasing number of school districts have initiated school improvement programs. Based on the findings of research studies on effective teaching practices (Brophy, 1979; Guskey, in press) and effective school practices (Edmonds, 1982; Purkey & Smith, 1983), the principle goal of these programs is to improve academic achievement. And in most cases, this translates into improving students' scores on standardized tests (Cuban, 1986).

The research on effective schools indicates that all administrative levels of education are to some degree important in an improvement effort, from the state and district down to the building and individual classroom. However, there is little doubt that the most direct—and perhaps most potent—influence on student learning is the classroom teacher. Regardless of the commitment of the building principal, open and superintendents, classroom teachers remain the crucial component in any school improvement program. Teachers are the ones who work most directly with students and, therefore, are the principal implementation target for an effort to improve student performance.

Yet, teachers are often reluctant to try new ideas or innovations that require them to change the way they teach. Most of what teachers know about teaching is learned through their own classroom instruction, which has been gained through personal experience in the classroom (Lortie, 1975). This knowledge typically comes through a series of trials and errors, verified in some fashion over time. In many ways, it is a sort of folk wisdom. To change the way teachers teach core academic areas (reading and math) means disrupting this hard earned sense of stability, questioning aspects of their "knowledge" of teaching practices. It also may mean risking teaching errors, and perhaps some failures.

Lack of experience is one of the reasons by which teachers' reluctance toward new ideas or innovations can be transformed into any serious consideration of change. One component of a recent comprehensive study (Gersten, Camrine, Zored, & Cronin, 1980) addressed directly the results of this study, coupled with the results of research by Gersten and others (1978), demonstrated that providing several intriguing insights into the process of change. In addition, these results offer fairly clear directions for facilitating educational change and directions to avoid.

The Direct Instruction Study

Center of the Study

In 1978, a Federally-supported compensatory education program (part of the focus on the Bush Administration's "War on Poverty"), was initiated in a large urban district, was asked by the U.S. Office of Education to adopt a more effective instructional format. At the time the schools in the district were offering a so-called "modified pacing" approach in which teachers determined their own curriculum emphases and instructional time allocations. Under the approach the achievement levels of Black and Hispanic students in reading, language arts, and mathematics at the same time that teachers remained consistently low, ranging between the 20th and 21st percentile on standardized tests. The district, given six months to select a research-based instructional model and begin its implementation.

Administrators in the district selected Direct Instruction, a highly structured, basic skills approach, using the Direct Reading and Language Curriculum. This selection was made without input from the teachers in the Follow Through program.

The decision to select Direct Instruction was largely due to the documentation of its success in the inner-city school districts in an evaluation funded by the U.S. Department of Education. (Guilmette et al., 1979). In addition, the school district had been using Distar with its Hispanic students, and research had indicated significant achievement gains. However, it was clear from local records (Emrick & Peterson, 1979) that behind the decision was the Federal government's demand that the district either use a different curriculum or spend over a million dollars in federal support.

Because of lengthy negotiations, the decision regarding program implementation was not made until late October. Thus, teachers were not informed of the program adoption until they returned to school on November 1. Two days of preview training were provided for the teachers. Then all 21 Follow Through teachers in kindergarten and first grade were asked to implement the Direct Instruction Model. Second-grade implementation was delayed for two months. Consultants from the University of Oregon were asked to make regular visits to the district to provide technical assistance, monitor implementation and train the district's own staff in measurement and evaluation techniques for supervising Direct Instruction programs.

Direct Instruction is a very structured academic program. The reading, language, and mathematics curricula in Direct Instruction are highly structured. In detail exactly how teachers are to perform a new skill, exactly which examples to use, and exactly how much practice will be required, so as to make student mastery on an objective. The only teacher's role then is to identify student errors. The goal call for an intensive academic focus, beginning in kindergarten...a major shift at that time in the district.

This approach was dramatically different from the "business as usual" approach used previously in the seven Follow Through schools. The method of supervision was also rather unique. New teachers were observed at least once a week. The supervisor provided specific feedback on teachers' own teaching, perhaps suggesting alternative teaching techniques, sometimes actually demonstrating how to use a new technique by "taking over" a group for 5-10 minutes. Supervisors also included the placement and grouping decisions, primarily on the basis of students' performance on criterion-referenced tests. The teachers were required to attend weekly meetings with the coordinators and to review their own teaching practices. This approach was comprehensive and demanding, requiring a commitment of time and effort.

They also preplanned classroom management problems and suggested approaches for improving motivation. Involvement of the teachers was not only required, but encouraged. Thus teachers receive a weekly "technical assistance" form containing the supervisor's analysis and suggestions.

In short, extremely great changes were required of these teachers. Many expressed initial resistance, resentment, and frustration. A study was conducted to analyze program implementation comprehensively and the accompanying changes over a two-year period. Part of this research involved in-depth interviews with all teachers in the program. These interviews were conducted each spring by an agency unaffiliated with either the school district or the Direct Instruction program staff. The information gathered over this two-year period by the interviewees offers unique insights into the evolution of teachers' attitudes toward structured educational models and the process of change in general (Emrick & Peterson, 1979; Cronin, 1980, 1983).

Findings

Magnitude of Change

All teachers reported that the approach to teaching represented by the Direct Instruction program was not teaching the way they had been taught in school. From both the way they had been trained and the way they had previously taught. The only exception was one classroom teacher. The two differences most frequently mentioned by the teachers were the emphasis on systematic teaching, in-depth "time-on-task" emphasis on skills. Not a single teacher had used a format as structured as that used in teaching the Distar curriculum. Some reported feeling initially stifled by a program in which "all decisions are made for you."

Others reported the loss of control over determining the amount of time devoted to reading, language arts, and mathematics. But none of the teachers felt that Direct Instruction was a particularly difficult approach to master. The Distar curriculum were typically complex, concise, well-defined, and straightforward.

Initial Implementation Problems

The majority of teachers expressed resentment at having no voice in the decision to adopt the Direct Instruction model. For example, one teacher said:

The two days of preservice training we have been through haven't been very effective. I didn't really listen to very much after we were told (by a district staff member). "This is what we will be doing this year, like it or get out."

This form was exacerbated by the rushed and abbreviated training program.

On the school year began, teachers found that, for the first time in their professional careers, their performance was monitored by unannounced visits and the teachers were required to require prescheduled observation. The teachers opposed this idea, believing it that the students were simply not ready for their observations. After several meetings and negotiations, the issue was resolved in favor of the consultants, with the reluctant approval of the teachers.

Strained relationships between the consultants and teachers continued throughout much of the first year. Many teachers felt the standards set for the consultants were so high that the observations made by the consultants were inconsistent, and that they were uncomfortable "being checked up on." By the end of the year, however, several teachers reported that the observations and in-class visits were extremely helpful. As one teacher put it:

The demonstrations in the classroom were the most helpful part of the training. These were the real-world test of how Distar operates. More demonstrations in my own classroom would have been even more helpful, especially in the beginning.

The situation kept improving. In fact, by the end of the second year, over half of the teachers reported deriving benefits from classroom visits. Feedback in the closing interviews indicated that the consultants was considered to be clear and relevant to day-to-day problems (Cronin, 1980, p. 27).

Philosophical Clashes and Resolutions

The consultants' consistent refrain voiced by almost all the teachers concerned for conflict between the basic skills "time-on-task" orientation of Distar and their own view that a teacher of young, disadvantaged children should attend to the whole child, fostering his or her emotional and social, as well as academic growth. By the end of the second year, all but one of the 23 teachers interviewed agreed that "Direct Instruction was compatible with their educational and philosophical philosophy." (Cronin, 1980, p. 23).

This dramatic change in philosophy and thinking was the strongest and most interesting finding in the study. Despite the rushed circumstances of the initial training, lack of support from the principal, lack of consensus-developing or articulating over the actual issues, lines unrealistically high demands placed on the teachers, most teachers' attitudes toward Direct Instruction soon on the teachers saw that the new model could provide the children learn and improved their effectivness as teachers.

The interview team reported that "teachers seemed to derive great satisfaction from seeing their children read, speak in correct sentences, and attain more positive self-concepts. Teachers also mentioned increased self-reliance, greater social maturity, and a decrease in "acting out behaviors from their students as further by products of experiences in the Direct Instruction program" (Cronin, 1980, p. 34).

In general, the final explanation for this dramatic shift in attitude. She explained that the conflict that she was experiencing was different from the one-centered, humanistic, educational philosophy and the Direct Instruction model "had been more apparent than real" (Cronin, 1980, p. 27). Her statement is worthy of further comment. The senior author of this paper-experiment was

Continued on Page 12

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Teaching Transformations to the

By Diwe Botero
University of Oregon

Transformations are rules, verbally stated data that governs the relationship between examples of a concept and responses (Engelmann & Carnine, 1982). For example, teaching addition may involve a transformation.

\[
\begin{align*}
40 + 1 & = 41 \\
40 + 2 & = 42 \\
40 + 3 & = 43 \\
40 + 4 & = 44 \\
40 + 5 & = 45 \\
\end{align*}
\]

The verbally stated rule that governs the relationship between examples, 40 + 1 = 40 + 2, etc., and responses, 41, 42, etc., is an illustration of a transformation. When answering a 2-digit addition problem, "0" occupying the ones place to one digit numbers, the one digit number will remain the "0" in the "ones" digit. This example demonstrates the difficulty in verbally describing and stating a transformation. This difficulty has resulted in the basic assumption that transformations are difficult or impossible to teach instructional procedures on such skill, systematic review, and high degrees of structure. He also realized that the students received their attention under an intelligently structured approach, both in terms of skill acquisition and attitudes towards reading. The review, the rehearsal, and the insistence on mastery in no way hindered their imagination or their interest in reading, writing, and talking about reading. The teacher interviewed by Cronin emphasized that it seemed important first to use a new method like Direct Instruction before an accurate appraisal of its value could be made.

Comparative Research on Mastery Learning

The idea that significant change in teachers' beliefs and perceptions generally follows successful implementation of a new innovation has also been noted in Guskey's research on the implementation of Mastery Learning (Guskey, 1983, 1984, 1985). In one study, Guskey (1984), a large group of intermediate and high school teachers was trained in the use of Mastery Learning techniques. Following the training the vast majority of these teachers used the techniques in their classes and saw dramatic improvements in their students' learning as a result. However, a small group of teachers used the new techniques and saw little or no improvement in the learning of their students, and another small group of teachers never bothered to try the new techniques at all.

When measures of change in teachers' beliefs and perceptions were analyzed following implementation, the teachers who saw learning improvements expressed increased responsibility for student learning outcomes and more positive attitudes toward teaching. That is, they felt greater personal responsibility for "showing off" or how poorly their students learned and began to have much more in their attitudes toward teaching. But at the same time, these teachers expressed diminished confidence in their teaching abilities. Apparently, the increased effectiveness disrupted the self-confidence these teachers had first expressed in their teaching. The beliefs and perceptions of the teachers who used the new techniques, but saw little or no improvement, and those whose implementation remained relatively unchanged, similar to a control group of teachers.

Guskey concluded that incapacity training and the implementation of a new innovation alone may be insufficient conditions for change in teachers' beliefs and perceptions. Apparently, teachers must first gain tangible evidence that the new procedures will work in their classrooms with their students. Then, and perhaps as Guskey (1984) suggests, only then are significant changes in teachers' beliefs and perceptions likely to result.

Discussion

The idea that changes in teachers' attitudes toward thinking follow rather than precede, changes in teachers' classroom behaviors runs counter to much current practice. Many contemporary in-service programs set out initially to change teachers' attitudes or gain some sense of commitment from the participants prior to the implementation of a new program. This is often done by citations of research pointing out the benefits of an approach or work geared to foster positive attitudes towards the innovation.

However, Guskey's (1984) research, as well as that of Crandall and his associates (Crandall, 1982, 1983) suggest that such attempts to change teachers' attitudes are unlikely to bring about any real change. Serious commitment is likely to follow and occur after teachers have had an opportunity to use the new program or innovation and have seen that it really assists them in teaching their students, especially the difficult-to-teach students. Some experience has taught us rarely occurs prior to the implementation of a new program, it is critically important that the teachers be able to convince each other of the value of which the program can be done. Crandall (1983), for example, found that training by a person who does a great deal of the kind of work he is doing has no effect on the program. In a major theme in the San Diego study research. (To be effective, teachers or consultants must incorporate the teachers' work with the new techniques that is useful and applicable to their readerships will be to create a major theme that is relevant to the classroom, not theoretical overviews.)

It is equally important to provide teachers with ways to gain evidence of the effects of their efforts on valued student outcomes. Teachers need to see that the grades are better (or whatever) changes they are making are making any result in some form of improvement. The best sort of evidence for this purpose, however, is usually not end-of-year standardized test results. In the Direct Instruction study for example, teachers' attitudes begin to change when they saw their children begin to read better, speak in a more correct and more sophisticated fashion, and use their class time more efficiently. In Mastery Learning programs, teachers' attitudes begin to change when they saw improvements in students' performance on weekly teacher-developed formative tests and when there was greater student involvement during class sessions. It is also important to keep in mind, however, that these changes do not occur overnight but evolve over a period of time.

We believe that the issue encountered in the implementation of a program are not unique, but are likely to be encountered in many school improvement programs. The experience has taught us two major lessons. The first is that providing competent and knowledgeable technical assistance, training, and feedback is extremely important—and difficult to do sensitive but direct fashion. The second is that changes in attitudes usually follow, rather than proceed, changes in behaviors.

1. Dressing
a. Task: learner must identify whether a teacher has an article of clothing on (e.g., pants on, shirt on, shoes on, etc.).

b. Does the task involve a transformation?

2. Can the task be used to process each example? Yes. The task puts on an article of clothing (shirt, pants, etc.)

3. Is it a yes or no response for each example? No. The learner will be required to make a yes or no response for each example.

References


will respond either "Yes" or "No" to each example presented.

3. Is there a sameness which relates each of the stimuli? (e.g., Na. All responses are either "Yes" or "No.

The three criteria test was not met for this task, thus, a transformation is not implied.

2. Addition

a. Test Training: Learner is given a set of 3

unrelated equilators and instructions
to solve them. These

questions involve adding two-digit

numbers with "9" occupying

the places one to one-digit numbers

(e.g., 40 + 1 = 40 + 2 = 

etc.),

b. Does the task involve a transformation?

1. Can the same task be used to

produce each example? Yes. The

learner is presented an unrelated

problem with the symbols "+" and "-", 40 + 1 = 40 + 2 =

etc., for each example.

2. Is a different representation required for each example? Yes. The nature of the response will depend on the example, thus each representation will be different (e.g., 42, 43, etc.)

3. Is there a sameness which relates each example to each response? Yes. The responses are all two digit numbers which are formed by replacing the "0" in the two digit number with the one digit numbers for each equation.

A transformation requires an implicit or explicit logical rule relating changes in example to changes in responses. Once the general pattern of behavior has been identified as a transformation, the sequence can be designed to teach it. This sequence should be designed according to the juxtaposition principles and rules for transformation sequences (Carminie & Sten, 1981; Engelmann & Carnine, 1982).

There are four juxtaposition principles (1) wording, (2) setup, (3) difference, and (4) communication (Carminie & Sten, 1981). These juxtaposition principles are designed to enable the communication as clear as possible to the learner and to demonstrate what is the same and different about all the examples.

Worded setup principles suggests that the wording and setup for initial teaching sequences should remain the same from example to example. Both the wording and setup principles are useful in isolating the critical features (i.e., those features that should control responding of the concept as quickly as possible.

In contrast to concept teaching, transformation use only positive examples. To focus the learner's attention realism and differences in positive examples which lead to different responses, the sequence first includes examples that differ in just one feature. Then, to show the range of application of the rule, widely different and unrelated examples are shown (Carminie, 1976). Finally, examples are presented that bear no predictable relationship to one another. The first two to five examples are modeled and the rest are used as testing examples. The entire sequence should communicate the concept within 20 examples (Carminie, 1976). Engelmann & Carnine (1982) recommend that wide variation of using these principles to design instructional programs are: (1) more efficiency (2) more information in less time (3) less power (4) generalization facilitation.

The following sequence demonstrates how the juxtaposition principles are applied according to these rules for teaching the transformation of adding two-digit numbers (in two places) to one-digit numbers.

In the first three trials (A) minimal differences are demonstrated by changing one thing at a time, and in the remaining trials (B) the sameness is shown by presenting widely differing examples. The wording (C) and setup (D) principles were also followed. The formats used in the remainder of this paper are modeled after sequence format presented in Theory of Instruction Principles and Application (Engelmann & Carnine, 1982).

**Examples: Trainer wording**

1) 40 + 5 = "LISTEN, MY TURN": 40 + 1 = 45 "WHAT DOES 40 + 5 = " 45" 2) 40 + 5 = "LISTEN, MY TURN": 40 + 2 = 42 "WHAT DOES 40 + 5 = " 45" 3) 40 + 5 = "LISTEN, MY TURN": 40 + 3 = 43 "WHAT DOES 40 + 5 = " 45" 4) 40 + 6 = "LISTEN, MY TURN": 40 + 1 = 41 "WHAT DOES 40 + 6 = " 46" 5) 40 + 6 = "ANSWER" 6) 40 + 6 = "ANSWER" 7) 40 + 6 = "ANSWER" 8) 40 + 6 = "ANSWER" 9) 40 + 6 = "ANSWER" 10) 40 + 7 = "ANSWER" 11) 40 + 7 = "ANSWER" 12) 40 + 4 = "ANSWER"

Transformations that are difficult to describe verbally, are considered among the more difficult rules to teach. Likewise, individual examples of severe retardation are considered among the more difficult population to teach. Individuals with severe mental retardation generally require more time to learn and have greater difficulty generalizing than do non-handicapped learners. Based on these assumptions about teaching transformations and individuals with severe handicaps, many educators have concluded that people with severe mental disabilities cannot learn transformations (Snell, 1978; Stephens, 1979). However, a study conducted by Borizzo (1984) demonstrates that individuals with severe mental retardation can learn transformations in a relatively short period of time and successfully generalize to untrained examples of the transformation when juxtaposition principles and transformation rules are followed.

The major purpose of the study was to demonstrate that individuals with moderate and severe retardation could efficiently learn transformations and generalize to untrained examples. A significant finding of the study is that it shows how by designing instructional sequences using the juxtaposition principles and transformation rules, efficiency and generalization power could be facilitated.

The study compared two different sequences designed to teach time-telling and addition transformations. One sequence was designed according to the juxtaposition principles and transformation rules. The basic differences between the two approaches were the selection and sequencing of examples.

**Subsets**

The subjects were 12 individuals with mild retardation and severe mental retardation. These 12 subjects were randomly assigned to one of four conditions:

1. Time-telling sequence juxtaposition principles.
2. Time-telling sequence no juxtaposition principles.
3. Addition sequence juxtaposition principles.
4. Addition sequence no juxtaposition principles.

Thus, three subjects participated in each condition.

**Procedures**

The time-telling task consisted of the learner identifying "the hour" when the hour hand varied between two hours. For example, the learner would verbally respond "5" to the hour hand when it varied one to three minutes between 5 and 6.

The addition task required the learner to add two-digit numbers with "9" occupying the ones place, to one-digit numbers (e.g., 40 + 7 = 47).

**Juxtaposition Principles and Rules Not Followed**

Time-telling, Six numbers (2, 4, 5, 6, 7, and 8) were chosen to design this sequence. However, these numbers were selected and sequenced according to the way they occurred on the clock. The hour hand was placed exactly between numbers and did not vary. Juxtaposition principles and transformation rules were not followed to design this sequence.

**Examples**

2 Listen, my turn. "What hour is in the first circle?" "Two." "What hour is in the second circle?" "Three." "The little hand is between the two numbers. When the little hand is between two numbers, we say the first number. "What is the first hour?" "Two."

The major problem crept by not following the principles and rules in this case is that the sequence demonstrated a limited range of positive variation. All times except "2" were on one side of the clock and the hour hand did not vary between hours.

Addition. Eight addition facts were selected for this addition sequence. These facts represent a limited range and were taught in the order they would normally occur.

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Effective Correction Procedures For Teaching Retarded Adults

By Isabelle Egan
Teaching Research (Oregon System of Higher Education) and Long Beach, CA School
Rusell Gersten
Larry Irvin
University of Oregon
Reported by Russell Gersten

Portions of this article are adapted from a manuscript currently in preparation for the American Journal of Mental Deficiency.

One of the cornerstone of DI is the use of appropriate correction procedures when errors are made. The importance of correction procedures has also been stressed in the behavioral literature on teaching and training severely handicapped individuals, although with rather a unique slant.

Throughout much of the early seventies, the pivotal figure in the field was the late Mark Gold. Gold argued that because the use of behavior modification techniques on severely retarded individuals, it was determined, rather than invented. His early demonstration projects were extremely influential in the field, which led to the development of training and intricate assessment and towards training with built-in criterion-referenced orders was equally influential. In our view, the most questionable tenet in the Gold canon was his argument that those involved in training moderately and severely retarded clients (or clients who can not easily get assessed what the trainer is talking about. Rather, one constant, non-punishing cue should always be used by the trainer to make the worker aware of what he or she is doing is incorrect. If the client makes an error, the

In our work with severely retarded individuals, we became aware of the wide variations between the clients. Some clients, though quite weak in expressive language and physical coordination, appeared to have relatively sophisticated receptive language abilities. In addition, these clients were frequently difficult to train. It was immediately apparent to us that the gold standard, "Put the flat side up" or "Put it this way," was not effective when the stimuli were verbal. Therefore, we used sentences that were simple and clear, as a rule. We found that all of the previous studies had used two-choice discriminations, in a two-choice discrimination, giving specific information, such as flatness, roundness, etc. is irrelevant. As long as the trainer used simple language, the clients were trained to do so. "Put the flat side up" or "Try another way," or an idiomatic "No," they will try the better option.

Egan also pointed out that the earlier studies failed to measure the receptive language abilities of the subjects. For many low-functioning clients, specific, verbal feedback may be dysfunctional. It is only for those clients with, some language skills that specific corrective feedback was recommended.

In the late seventies, Irvin & Gersten (1982) developed a measure of receptive language for moderately and severely retarded individuals, the Training Performance Scale. This measure dealt with comprehension of the type of simple directions and corrections typically en- countered by the subject. They report that the measure was reliable and valid and that the instrument is reported in Irvin, Gersten, & Henry (1982) and Irvin, Gersten, Taylor, Close, & Bellamy (1981). With the development of such an instrument, we can now assess whether the subject has acquired the acquisition of the skills by subjects with very low receptive language skills. In the present study, a four-choice visual-motor sorting task was employed which involved difficult visual discriminations and easy physical manipulations so that effects due to specificity of verbal feedback could be evaluated easily.

Training

The training was conducted at a small table with side-by-side chairs for the trainer and the subject, in a lighted, quiet room at the activity centers.

Experimenter

Eight trainers were employed in the study. Each of the trainers had worked, or was currently working, in a work activity center for retarded adults. The trainers were randomly assigned to one of the two conditions. They were trained, by the experimenter to the criterion of correct performance before training was begun. The training was conducted at the training sites and involved demonstrations by the experimenter and role-playing practice by the trainers. Trainers were randomly assigned to one of the two different training conditions.

Reliability

To assure consistent training procedures, a reliability check was carried out. Inter-rater agreement regarding scoring of subjects performance was assessed on a random basis 10 times throughout the study.

Procedure

Each training session lasted approximately 20 minutes and was conducted over consecutive days until the subject had either matched training criterion or been trained a total of 120 minutes (i.e., 6 days). Criterion was 2 out of 3 consecutive complete trials correct—one trial being 16 matches, or 4 each of the 4 terminal end shapes.

Training

Each task was demonstrated once to the subject. Then training on the task began. The 16 terminals (4 of each shape) were replaced in a pile on the table in front of the training bin. Subjects in each condition were in a group of 4. The subject would be given a Training Performance Sample (Receptive Language Score of eight (out of 12) or above were con- sidered to be competent and those scoring seven or below were considered to be novice. Subjects within each of the groups were then randomly assigned to the two training conditions—specific and non-specific verbal corrections. Subjects ranged in age from 19 to 41 years.

Apparatus

The materials for the criterion tasks were electrical terminals approximately one inch in length. They differed in shape only at one end, where some were round, some pointed, some flat and some bent. A small cardboard box, approximately 10 inches in length, with four compartments, served as a bin for the terminals. Each compartment was partially covered by a cardboard flap upon which a sample of one of the four terminals was attached for the match-to-sample training trials which are described below.

Table 1 presents the number of subjects in each condition who met criterion within the allocated time. The data in this table are consistent with the expected interaction. In fact, a significant interaction was observed between the training conditions and the subjects, 80% met criterion with specific feedback and only 50% with non-specific feedback. For the Low Receptive Language subjects, the difference is much smaller, 33 percent versus 22 percent, respectively.

Table 2 presents descriptive statistics for three dependent variables—percent of subjects meeting criterion within 120 minutes, minutes in training, and trials to criterion. The reader is reminded that the latter two variables were only inter- esting for those subjects who reached criterion in less than 120 minutes. Data are presented by treatment condition for: (a) all subjects, (b) those with high receptive language, and (c) those with relatively low receptive language skills.

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Teaching Transformations

Continued from Page 13

TRAINER'S WORDING
40 + 1 = "41 + 1 = 42."
40 + 2 = "42 + 2 = 42."
40 + 3 = "43 + 3 = 43."
40 + 4 = "44 + 4 = 44."
40 + 5 = "45 + 5 = 45."
40 + 6 = "46 + 6 = 46."
40 + 7 = "47 + 7 = 47."
40 + 8 = "48 + 8 = 48."

It was predicted that subjects trained with the sequences designed according to the juxtaposition principles and transformation rules would reach criterion in less time and more successfully generalize than subjects who were trained with the sequences not following juxtaposition principles and transformation rules. This prediction was tested using the following procedures.

Subjects in each condition were trained using modeling, prompting, correction, and feedback reinforcement procedures (points given for appropriate behavior and correct responses). All subjects were trained using the same setting. Training sessions were 20 minutes long for each subject.

Results

Results showed no difference in accuracy (z = 1.72, p > .05) or time to criterion (z = .20, p > .05) between subjects trained with transformation sequences designed with juxtaposition principles and transformation rules and those who were trained with the sequences not following these principles and rules. However, a significant difference was found between the two in terms of immediate generalization (z < .001). Specifically, ten of the twelve subjects trained with transformation sequences designed with juxtaposition and transformation rules performed with higher percentages of accuracy on generalization stimuli than those trained with the other sequences.

Discussion

These results demonstrate that individuals with severe mental retardation can learn complex transformation and can successfully generalize to untrained examples. Another important finding is that generalization is greatly facilitated through the use of juxtaposition principles and transformation rules. The results on time to criterion and accuracy can best be interpreted by considering the amount of information presented relative to the time required to reach criterion and the amount of generalization. More information was presented and greater practice time was required for subjects trained with time-adding and addition sequences designed according to juxtaposition principles and transformation rules, relative to the time required to reach criterion, than subjects trained with the other sequences.

These findings have important implications for transformation research with moderately and severely handicapped learners. The present study demonstrated that subjects with moderate and severe mental retardation could learn transformation and time-telling transformations, and that generalization was facilitated through the use of juxtaposition principles and transformation rules. However, given the emphasis on training functional community-referenced skills (e.g., living, self-care, vocational, etc.) (Bellamy & Wilcox, 1980; Gold, 1969; End, 1985; Brown, Arnston, et al., 1979; Brown, Falvey, et al., 1979), rather than academic skills, training sequences using transformation rules is untested. Questions related to the effectiveness of juxtaposition principles and transformation rules require more research, particularly in the area of functional skill transformations to be addressed in future research.

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SUMMARY

Teaching transformation research with moderately and severely handicapped learners is becoming more prevalent. It is important to study how these students learn transformation and time-telling transformations, and how generalization can be facilitated through the use of the juxtaposition principles and transformation rules. The study conducted in this research aimed to compare the success of subjects trained using the principles of juxtaposition and transformation rules to those trained without them. Results showed no significant difference in accuracy or time to criterion between the two groups. However, significant differences were found in immediate generalization, with subjects trained using the principles of juxtaposition and transformation rules performing better. The study highlights the importance of these principles and rules in facilitating generalization in severely handicapped learners.
Teaching Reading to the Learning Handicapped

By Stacey J. Kasendorf
Curriculum Resource Teacher
Learning Handicapped Department
San Diego City Schools

In a large urban school district, where mobility is a significant factor, a K-12 reading program for all Learning Handicapped students does not seem feasible. In our district, this goal was successfully accomplished in the San Diego Unified School District, where the target population includes more than 125 teachers and over 1,300 students.

The project began in March, 1983, when eight special-day-class teachers field tested the Corrective Reading (SRA) program in 3 secondary schools. Results from this study showed positive growth in the word attack and word identification subtests of the Woodcock Reading Mastery Test. More encouraging, however, were the teachers' and students' attitudes about the positive academic gains, reduction of behavior problems, confidence in students' reading abilities and high teacher-student interaction.

During the following school year (1983-84), Corrective Reading was implemented in the Secondary schools in one of four regions within the city. Thirty teachers and 107 students were involved in this implementation, again showing positive growth. Effective training, conducted by SRA consultants and authors of the program, was one of the key factors in the success of the program.

In the Spring of 1984, a small study was conducted in selected elementary schools using Reading Mastery and Corrective Reading. The results continued to prove that direct instruction in reading, taught effectively by trained teachers, was the outstanding method to use with learning handicapped students of all ages.

The fall of 1985 was the exciting beginning of full implementation. Over 125 teachers were trained from August through October by key authors, consultants, and San Diego Unified resource staff. This full implementation required three main components: school board approval and support, an evaluation design, and teacher training.

The district Evaluation Services Department assisted with the data collection and compilation. Teacher attitudinal surveys were disseminated with random teacher interviews as a follow-up.

The evaluation design included a pre- and posttest for randomly selected students in each classroom. Students in grades K-3, who were instructed via the Reading Mastery I and II programs, were tested on the Woodcock-Johnson Psychoeducational Battery Part I, Part II, Reading Cluster. Students in grades 4-12 were taught with the Corrective Reading (Decoding) Program. These students were pre- and posttested on the Woodcock Reading Mastery Test.

The final data will be disseminated to the School Board in September. For that reason, tables and graphs are unavailable at this time. The overall growth showed a 6-month gain in reading for all students in grades K-12 in terms of months of instruction. Phenomenal statistics were also available for individual students. For example, one fourth grader made 24 months' growth in total reading in seven months.

STUDY STRATEGIES

A Metacognitive Approach

* Skimming
* Summarizing
* Note Taking
* Outlining

* Direct Instruction in strategy steps
* Charting of progress in speed and accuracy
* Application of strategies to content textbooks
* Practice and feedback in thinking strategies

The program includes a student manual (contains masters for handouts and transparencies, lesson scripts, and lesson plans) and a Teachers/Trainers' Manual.

Only one program needed to teach an entire class:

A new Student Handbook includes steps, tips to remember and specific examples of applications to textbooks (key words, key points, important facts, and their relationships).