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Direct Instruction NEWS

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What Makes Schools Effective

By Richard H. Hersh
Dean of the Graduate School
University of Oregon

Editor's note. This article first appeared in the Eugene Register-Guard as a two-part series on November 23 and 24, 1981. It is reprinted here in full with the permission of the author and the Register-Guard.

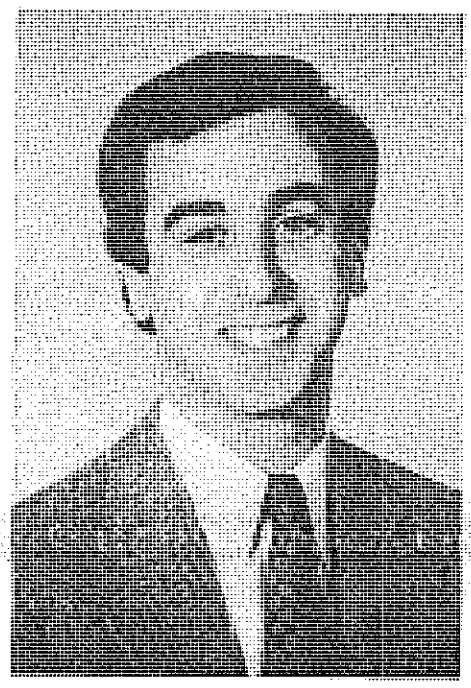
For the past two years I have been reviewing literature to determine what, if anything, makes some schools and teachers more effective than others. ("Effective" here refers to student academic achievement as measured by standardized achievement tests, usually in reading and math. This is not to suggest that such schooling outcomes are the only objectives we should consider but rather that they are, for the moment, the only variables on which we can easily compare schools.)

Happily, there emerges from such research a variety of clues, which when put together into a coherent whole, seems to make a great deal of intuitive sense.

What is particularly pleasing is that different researchers in a variety of studies are reaching similar conclusions about effective schooling, and that these conclusions are reinforced by school teachers and administrators who bring to research programs the critical eyes of experience. This conjunction of researchers' knowledge and professional educators' wisdom marks the first time in years that one might believe optimistically in the possibility of improving education in America.

During the early 1970s researchers had the public and policy makers believing that variations among schools make no difference in student learning. Although teachers' and administrators' daily lives denied such a conclusion, their protests were muted by the media and by critics' ready condemnation of American schooling. Now research findings and educational reality are congruent.

Three powerful facts have emerged. First, people run schools. How teachers, administrators, and students behave in a school setting matters and accounts heavily toward determining a school's effectiveness. Second, quality and not just quantity of effort, materials, and time is what counts. Previously



RICHARD H. HERSH

measured factors such as the total books in the school library, amount spent per child, and the average number of years of teacher experience have been shown to account for little difference between more and less effective schools. Third, the curriculum of the school, which includes both *what* is taught and *how* it is taught, is important.

The accompanying table lists two sets of attributes associated with most effective schools. Under the heading "Social Organization" are listed those items which pervade the school building. These attributes (Clear Academic and Social Behavior Goals; Order and Discipline; High Expectations; Teacher Efficacy; Pervasive Caring; Public Rewards and Incentives; Administrative Leadership; Community Support) help promote school-wide conditions for teaching and learning across all classrooms. In essence, these are necessary social conditions which help individual teachers and students to excel.

The second set, "Instruction and Curriculum," subsumes those items which are found in the most effective classrooms. These attributes (High Academic Learning Time; Frequent and Monitored Homework; Frequent Monitoring of Student Progress; Tightly Coupled Curriculum; Variety of Teaching Strategies; Opportunities for Student Responsibility), in the context of the previously mentioned social organization factors, help promote the classroom conditions for maximum student engagement with purposeful learning activities.

Please note that the distinction between the two sets of conditions ("Social Organization" and "Instruction and Curriculum") is not hard and fast. In fact they are both overlapping and interactive, complementary and reciprocal to each other. Clear school-wide goals, for example, not only may help generate community understanding and support but also may allow individual teachers to better assess the fit between their expectations for students, students' expectations of themselves, and the curriculum.

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Attributes of Effective Schools

Social Organization	Instruction and Curriculum
☐ Clear Academic and Social Behavior Goals	☐ High Academic Learning Time (ALT)
☐ Order and Discipline	☐ Frequent and Monitored Homework
☐ High Expectations	☐ Frequent Monitoring of Student Progress
☐ Teacher Efficacy	☐ Tightly Coupled Curriculum
☐ Pervasive Caring	☐ Variety of Teaching Strategies
☐ Public Rewards and Incentives	☐ Opportunities for Student Responsibility
☐ Administrative Leadership	
☐ Community Support	

Direct Instruction On Line

By Robert C. Dixon
Martin A. Siegel
University of Illinois

The boom in third-wave computer technology over recent years is spreading from business applications to educational applications. On the one hand, the prospect of widespread computer usage in the classroom is full of promise. In reality, however, little that has been promised has actually been realized. Francis D. Fisher recently reviewed computer courseware for the Ford and Carnegie foundations, and reached this conclusion:

> "Educational courseware is beginning to appear, but most is simplistic in design and fails to exploit the teaching power of the computer."

This conclusion may surprise some educators, but not devotees of Direct Instruction, who have long held a position strikingly similar to Fisher's with respect to the traditional delivery of instruction:

> Instructional material has been around for a long time, but most is simplistic in design and fails to exploit the teaching power of human beings.

The fact is, computers are no more innately qualified to teach than are people — indeed they are certainly less so. The fact that computers have many *capabilities* relative to effective and efficient instruction does not in any way insure that such capabilities will be exploited. Obviously, the effectiveness of computer-based education is contingent upon the principles of instructional design that guide the development of the courseware.

The Computer-based Education Research Laboratory (CERL) at the University of Illinois uses two Control Data Corporation main-frame computers to deliver instruction on approximately 1200 terminals stationed, literally, around the world. CERL's particular computer configuration is called PLATO R. Many sources develop curricula for PLATO, and the range of that curricula most likely approximates that found in non-computer (off-line) cur-

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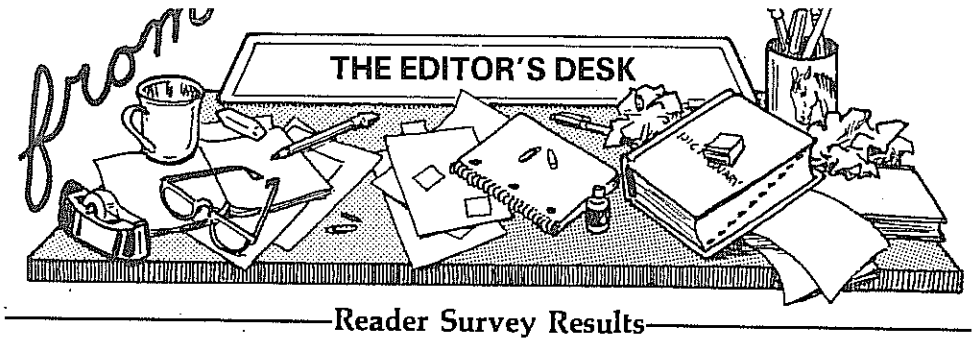

Reader Survey Results

Ed. Note. The three letters which follow are responses to our reader survey on reasons for using DI programs. The rationales they contain may help you in explaining DI to others. We much appreciate these thoughtful comments from obviously dedicated people.

Dear Editor:

I use DI programs because they work. My students, who use Decoding C, *do* improve their reading ability and their scores.

I like DI programs because they are organized in a logical manner — new information builds on old and old material is continually reviewed.

I approve of teaching to mastery and the concept that all students can learn the material.

I like the structured correction procedures.

John S. Zinselmeir
Bridgewater, California

Dear Editor:

I use DI programs because they raise students' scores in reading, math and language rapidly. I can think of several students, for instance, whose reading scores gained more than a year in just a year's time. This is really exciting for me and for the students.

I use DI programs because students have a better chance of being mainstreamed into the regular classroom. This chance also comes quicker with DI. Since I have worked with DI programs, I've had three students mainstreamed into regular classrooms. At the end of this school year, I will have three more students to mainstream next year because of their progress this year.

I like the way the DI programs have a system of motivation built into them. This really helps in classroom management, especially in a classroom like mine where there are so many different types of students, some of whom have violent tempers and are highly volatile.

DI has benefits for the professionals and paraprofessionals who use these programs. We have the chance to learn these programs and to become proficient at them. Training sessions and daily use greatly help this skill development.

Leslie Anne Hart
Wellton, Arizona

Dear Editor:

The reasons I use DI programs are:

1. I've seen how much better students' growth is.
2. The kids like and feel motivated by the programs. Therefore they perform better.
3. I have seen a difference with the kids using DI.
4. I feel very confident while using DI programs that my students are progressing on each incremental step of learning — not leaving some steps out. I really feel the genius behind the programs is this programming.
5. Kids take in information when they're ready to take it in — it may be taught several times before they get it. The placement tests for DI programs help to accurately assess their educational needs — so we can teach them *where* and *when* they're ready to take in information.

The reasons I support/promote DI programs are:

1. I want to share the wealth of kids' learning when before there was failure.
2. Many of the kids I work with need and achieve better with structured programs.
3. DI programs get the job done efficiently.

Cher Laughlin
Clatskanie, Oregon

Dear Editors:

We recently sent in our application fee for ADI membership and for subscription to the *DI News*. We have been reading a friend's copy, but decided it was time to have a copy of our own. Each issue appears to be improving dramatically — the last (Spring, 1982) was excellent. You have our best wishes for the continued success of that enterprise.

Bob and Susan Dixon
1815 Old Maple Lane
Savoy, IL 61874

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Research Reports

Russell Gersten, Director of Research at the Direct Instruction Model Sponsor's Office at the University of Oregon has recently made several DI-related presentations at national conventions. They include:

The case for impact evaluations in special education. Paper presented at the annual convention of the Council for Exceptional Children, Houston, TX, May, 1982.

A study of educational change in an urban setting: Integrating teacher effectiveness and implementation research. Paper presented as part of a symposium at the annual convention of the American Educational Research Association (AERA), New York, March, 1982.

Administrative and supervisory support functions for the implementation of effective educational programs for low-income students. Paper presented at the annual convention of the American Educational Research Association (AERA), New York, March, 1982.

The site variability issue in Follow Through revisited: Some new data, some new methodologies, and some new insights. Paper presented as part of a symposium at the annual convention of the American Educational Research Association (AERA), New York, March, 1982.

Copies of these papers are available by writing Gersten at Follow Through/Education, University of Oregon, Eugene, OR 97403.

Recent Publications

Becker, W.C. & Gersten, R. A Follow-up of Follow Through: The Later effects of the Direct Instruction Model on children in fifth and sixth grades. *American Educational Research Journal*, Spring, 1982, *19*(1), 75-92.

Gersten, R., Carnine, D., & William, P. Measuring implementation of a structured educational model in an urban school district: An observational approach. *Educational Evaluation and Policy Analysis*, Spring, 1982, *4*(1), 67-79.

Two Follow Through Directors Resign

Joan Gutkin resigned recently as Director of the Direct Instruction Model Implementation Site in New York, N.Y. She had held that position for many years. Joan was presently given a distinguished service award by the DI Model Sponsor Staff for her years of committment to the Model and to educational excellence for the students of P.S. 137 in Brooklyn, N.Y.

Marion Williams will retire this summer as Director of the Model Implementation Site in Flint, Michigan. Marion has directed the Flint Project since 1968. She will be greatly missed by all the Sponsor Staff who have worked with her over the years, but we all extend our best wishes for the future.

Happy Birthday ADI - and Many Happy Renewals

ADI and the *DI NEWS* are one year old this month. And we're happy to report that as we mark our first anniversary, we're at the 500 mark in memberships and subscriptions.* You folks have "done DI proud" in supporting the movement during this first year. We hope to add many of your colleagues around the U.S. and around the world to our ranks in the coming year. But the real criterion we must meet is to secure renewals from our present members and subscribers — that's you.

We sincerely hope that you feel the Association and the *NEWS* merit your continued support. You may use the form on the back page of this issue to renew — or you may renew in person if you plan to attend the DI Conference in Eugene this summer. If you question whether we deserve your renewed support, we ask that you give us one more chance — and that you write to let us know what we could be doing to make the organization and/or the *NEWS* more worthy of your investment. We want very much to be a consumer-oriented group and to produce a user-oriented publication. With your input, we believe that we can do better in meeting your professional needs.

To encourage new members, we are offering "extended membership" to persons joining by August 1st. Join now and receive the year you pay for *plus* the time remaining in the current year, which runs until August 15. The sooner you join, the longer your bonus period will be. Persons whose new membership is received by August 1st will be considered charter members of the organization and will receive copies of the first four issues of the *DI NEWS*.

We hope that you will continue to support ADI and the *DI NEWS* during the 1982-83 school year and that you will encourage your colleagues to join you in supporting us, as well. If we all help the membership/subscription list continue to grow, we will all benefit from the increased services that such growth will enable us to provide. We hope to hear from you.

Stan Paine
President ADI

*This figure represents 460 memberships and 40 subscriptions only. If you receive the *DI NEWS* through subscription, please consider becoming a member of ADI this year. Benefits of membership are listed on the form which appears on the back page of this issue. If you have been receiving the *DI NEWS* under our sample distribution policy this year — and if you like what you have been reading — please consider entering you membership in ADI or your subscription to the *DI NEWS* for the coming school year. Your support will help us grow stronger in providing you with current information on direct instruction.

New Program Notes

DISTAR Reading, Level Five, is currently in the final stages of completion and will be published by Science Research Associates (SRA) this fall. Work will begin this summer on DISTAR Reading, Level 6.

Taking DI to the Community with "TMR's"

By Robert H. Horner
Heidi Rose

Direct Instruction typically brings to mind elementary school classrooms, small groups of students sitting around a teacher, rapid pacing, and carefully programmed academic materials. The technology of Direct Instruction, however, appears to have as much promise for teaching vocational, self-help and community living skills to severely handicapped learners as it does for teaching math, reading, and language to non-handicapped students. Consider Lisa.

ROBERT H. HORNER

Lisa is eighteen years old, severely retarded, minimally verbal, and a student in a secondary "TMR" classroom. During her IEP meeting Lisa's parents indicated that they want her to learn skills that would allow her to function more independently in community settings. They would like her to cross streets independently, purchase items from stores, go to movies, and learn a vocation. Two characteristics of these requests are worthy of note. The first is that they reflect a growing trend toward identifying age appropriate, functional, community-referenced objectives for severely handicapped students. The second characteristic is that unlike many of the skills taught to severely retarded students, the above activities require acquisition of a general case skill — one which the student can use in a wide variety of contexts. The purpose of this article is to describe recent efforts to use direct instruction procedures to teach general case skills to severely handicapped students.

"The general case has been taught when, after instruction on some tasks in a particular class, any task in that class can be performed correctly (Becker & Engelmann, 1978)." For example, a student in a classroom has learned the general case for double digit addition when s/he can add any pair of double digit numbers. A student in the community has learned the general case for street crossing when s/he can cross any street in town. Community skills are usually different from classroom skills in that they: (a) take longer to perform, (b) require more complex motor responses, (c) include more distractors, and (d) are more likely to change across performances.

People with severe disabilities often do not perform daily living skills related to moving about in the community, purchasing items, visiting friends, or taking advantage of leisure activities (movies, parks). With recent efforts to include severely handicapped individuals in community options has come an interest in how to teach these basic community skills. As with early efforts to teach math and reading, early efforts to teach community skills to severely handicapped students have focused on teaching a single example of the skill, and hoping that after the student learns that example s/he will be able to do other examples. As with our experience in teaching math and reading we have learned that severely handicapped students do not "generalize" very well.

While Direct Instruction with severely retarded students in the community may look different that Direct Instruction of math skills with a small group of non-handicapped children, the principles in use are the same. To teach community skills with severely handicapped students requires the same care in selecting and sequencing teaching examples as is found in a DISTAR program. A Direct Instruction teacher avoids student confusion about "b" and "d" by selecting and sequencing teaching examples. Similarly, the confusion associated with one-way and two-way streets is avoided by selecting and sequencing teaching examples.

Any community skill which requires that students perform correctly in non-trained situations (i.e., new streets, new vending machines, new electronic games, new items in the store) is a general case skill. The ability of severely handicapped students to learn these skills rests largely with the ability of teachers to adapt Direct Instruction technology to the community.

"A rose is a rose is a rose (Gertrude Stein, Sacred Emily, 1913)." In most cases you can also assume that the process for adding two numbers, or the rule

HEIDE ROSE

for defining a language concept will be the same from place to place and time to time. Because math, language, and reading skills are nearly the same in all parts of the country, it is reasonable to build programmed texts for teaching these skills. Unfortunately, the same strategy does not work for community skills. The skills required for street crossing in Eugene, Oregon are different from those needed in Denver, Chicago, or New York. The vending machines in Miami are different in their shape, sounds, and methods of operation from those found in Wyoming, even though they have many similarities. As a result, there are few programmed materials which teachers can use that are programmed for their local community. Of more importance, it is unlikely that a curriculum soon will be published which meets all the requirements of all local communities. The need to teach community-referenced skills, and the diversity among communities require that teachers of severely handicapped students assume a major role as *developers* of community skill sequences.

For the teachers of severely handicapped students, the teaching skills of pacing, prompting, reinforcing, and correcting must be supplemented with competence in selecting and sequencing teaching examples. Because of this, recent research at the University of Oregon has begun to address rules that teachers can use when programming vocational and community skills with severely handicapped students. Two examples of this work are described next.

As older severely handicapped students prepare to leave school, access to employment becomes a major concern. A recent study conducted by Rebecca McDonald examined the use of DI to teach a general case vocational skill. The skill involved using a plier-like tool to crimp and cut the wire leads of circuit board assembly performed by handicapped and nonhandicapped workers in the electronics industry. The job requires a general case skill because the type of components that are crimp/cut will vary from day to day. All components require the same manipulations (i.e., place each wire lead in the pliers and squeeze), but different components require slightly different ways

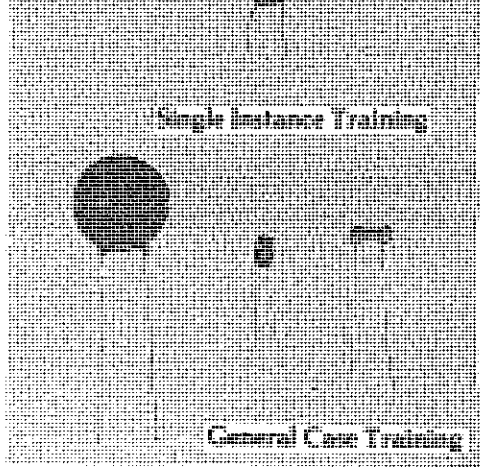

Fig. 2 - Parts used in single-instance and general-case training to crimp/cut circuit board components

of performing the task. Small components, for example, are more difficult to place in the pliers and the big components can get twisted. Errors occur if the pliers are not held next to the head of the component or if the component is held at an angle.

The twenty (20) components shown in Figure 1 sample the range of all components in terms of: (a) shape of the component head, (b) size, and (c) the distance between the wire leads. Four students from a TMR classroom were given the twenty components and asked to "crimp" them. This baseline measure was followed by each student being trained how to crimp-cut *one* component. Following training with a "single instance" component (Figure 2) they were again tested with the 20 non-trained components. The four students were finally trained (one at a time) with a set of three "general case" components (Figure 2). The general case components were selected to sample the range of component variability across the dimensions head size, head shape, and distance between leads. After a student could

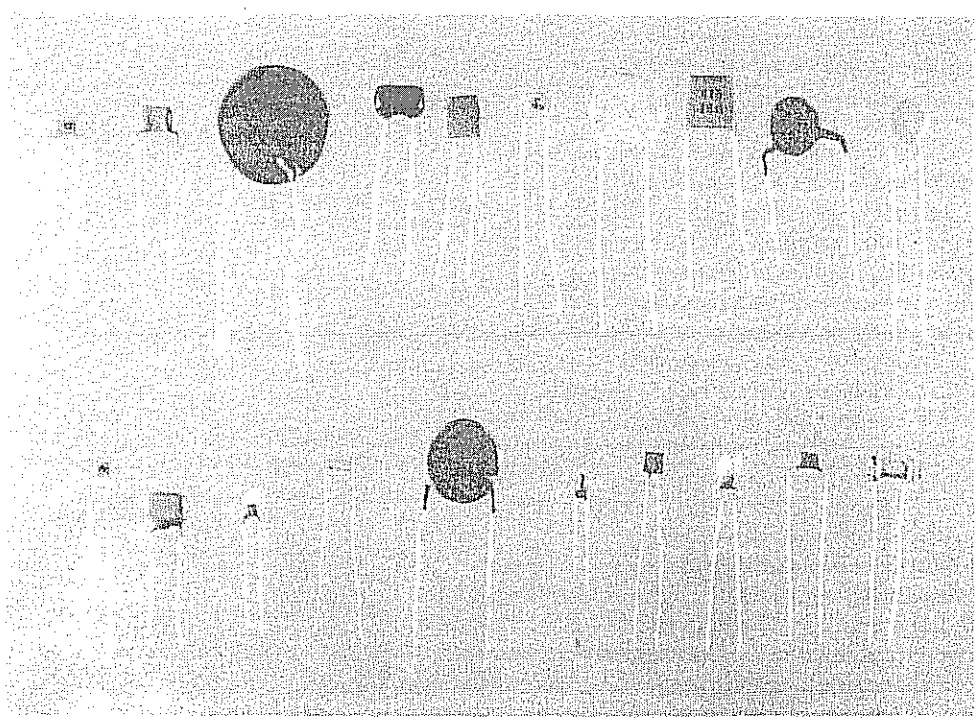

Fig. 1 - Examples representing the range of parts encountered in crimp/cutting circuit board components

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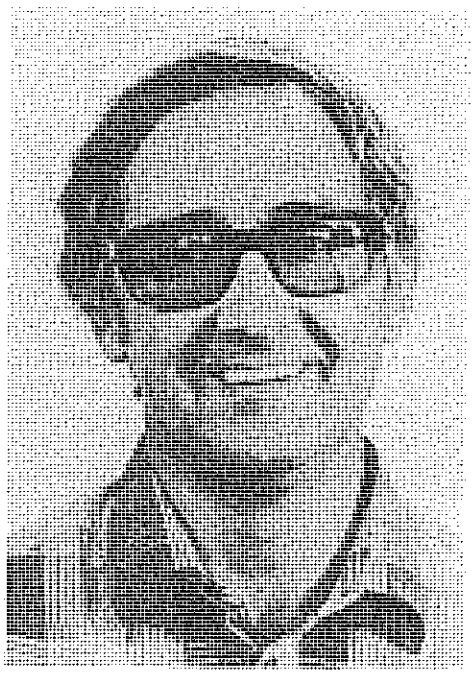
Comparative Distar Results from Five South Afrikaans Schools

By Chris van Rensburg
Rand Afrikaans University, South Africa

(Editor's note: Chris von Rensburg recently completed a visiting scholar stay at the University of Oregon while on study leave from his position as Senior Lecturer in Education at Rand Afrikaans University located near Johannesburg which specializes in teacher training. This summary is an abstract of the dissertation Chris wrote in completing his doctoral degree at Rand Afrikaans in 1981. Chris' work reflects a growing interest in Direct Instruction in his country and the increasing international support for the Direct Instruction movement.)



CHRIS VAN RENSBURG

This study was comducted in five schools for Asiatic (Indian) children in Lenasia, Johannesburg, South Africa. In 1978, all the firstgrade pupils in each school were grouped into four or five classes, depending on the number of pupils. Their reading progress was then evaluated over a three-year period. Stratified random sampling was done on the basis of the following stratification variables: sex, beginner/repeat/over age, and the scores obtained on a reading aptitude test for school beginners. The subject attrition rate for the study was 13.8%. After the classes had been equated, they were allocated to the different methods by drawing lots. The teachers in each school decided amongst themselves who would teach the Basal Reader method, the Breakthrough approach, or the Distar instructional system.

The basal reader scheme (*Let's Learn to Read*) and the Breakthrough to Literacy method were both taught strictly according to the meaning emphasis approach, since flash word teaching was emphasized. The basal reader and Breakthrough groups followed a general school readiness program in the first three weeks, while the Distar lessons commenced directly after the classes had been constituted.

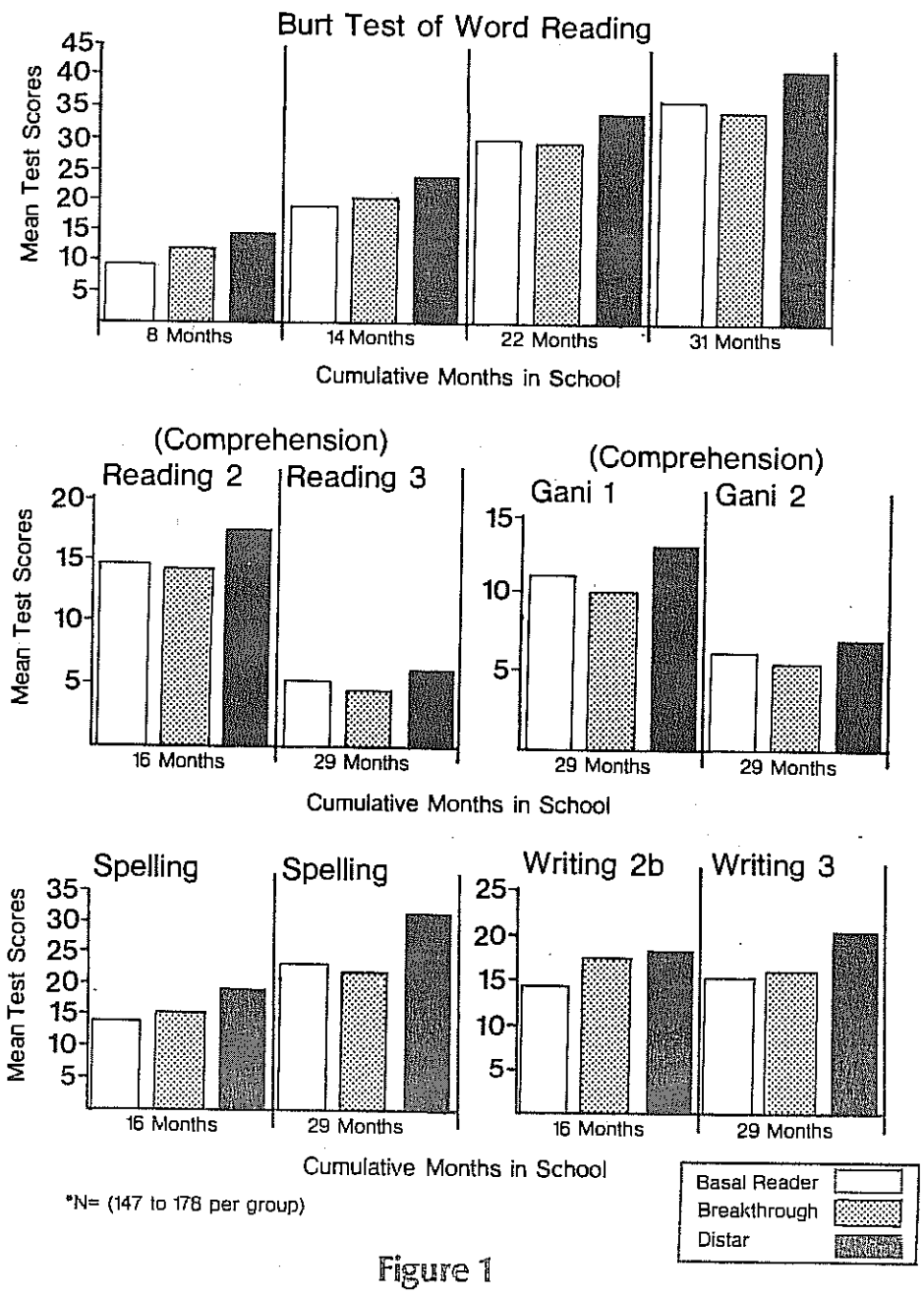
Approximately 30% of all the pupils in the five schools normally fail at least once in the first three grades. This failure rate is mainly caused by the fact that many children do not master the basic mechanical reading skills in those grades.

A structured interview with 92 percent of the parents of the children in the study revealed a generally better quality of life than that suggested by the high failure rate in the schools. Sixty-one percent of the fathers were classified in higher occupational categories (salesmen, clerks, storemen, business owners, professional people). Sixty-seven percent of the fathers had progressed further than grade 8 in school. On the other hand, only 36 percent of the mothers matched this achievement. English was the adopted mother tongue of 84 percent of the families, and a second language was spoken in 75 percent of the homes. Ninety-seven percent of all the children in the study were living with their natural parents. Discipline in these families tends to be strict and the children are generally well behaved. Thus, it was believed that the children *could* do better in school than they had done traditionally.

The table below shows values obtained for the mean reading, spelling, and writing scores. Three reading measures were employed. The Burt-test is a word identification and pronunciation test, while the Reading 2 and 3 and the Ganitests are comprehensive tests.

In order to establish the significance of the difference in the mean scores of the Basal Reader, Breakthrough, and Distar reading groups, t-tests for independent samples were computed. The Distar group achieved significantly higher mean scores in all the tests administered in the third grade, while none of the mean test score differences between the Breakthrough and Basal Reader groups are statistically significant.

There is presently a very strong and honest attempt on the part of all the education departments in South Africa to improve the quality of eduction for all population groups. The results of this experiment indicate that direct instruction programming could be very useful in attaining this goal.



*N= (147 to 178 per group)

Figure 1

Michigan Legislates Direct Instruction

On June 2, 1982 Michigan passed a licensing bill for School Psychologists (SB 220) section C8 of which defines the practice of school psychology to include: "Using behavior analysis methods including programmed instruction, personalized systems of instruction, contingency management, behavior modification, diagnostic prescriptive teaching, mastery learning, and direct instruction procedures, to prevent or ameliorate learning problems which are manifested primarily in educational settings and which adversely affect educational performance."

This is probably the first time direct instruction has appeared in any legislation and hopefully will change the training and education of school psychologists to include principles and techniques of Direct Instruction.

Direct Instruction in Special Education

A growing body of research is becoming available regarding the application of Direct Instruction in Special Education. This parallels growing use of Direct Instruction programs in the field. Ted Fabre at the University of Oregon plans a publication concerning the use of Direct Instruction programs and procedures in Special Education.

If you have any information on this topic, e.g., research reports, program descriptions, anecdotes etc., please send them to:

Ted Fabre
Follow Through/Education
University of Oregon
Eugene, Oregon 97403

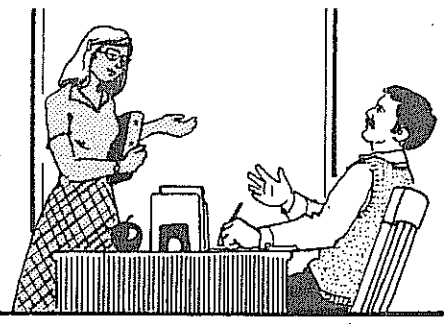
Free Workshops and Consulting

The University of Oregon Follow Through Model in conjunction with validated projects may be able to provide trainers for mini-Direct Instruction workshops and consulting. Workshops will provide participants with program overviews and specific teacher training. Participants need to be either implementing Direct Instruction programs or interested in receiving teacher training in these programs.

Consulting services to principals, supervisors, head teachers, or other supervisory personnel who have responsibility for implementing Direct Instruction programs can also be provided. Services would focus on classroom monitoring nad feedback to teachers with time also spent on setting up and interpreting criterion reference tests, scheduling, and lesson progress. Consulting services are for schools or districts implementing Direct Instruction programs.

Oregon will provide the trainers at no expense to the local schools or districts. If you are interested in setting up a workshop or consulting services in your area, please call or write Gary Davis, (513) 686-3555, Gary Davis Follow Through Project, Trailer 29B, University of Oregon, Eugene 97403.

Teacher to Teacher



by Jane M. Dougall Coté Whiteaker Community School, Eugene, Oregon

Ed. Note. The article for this edition of teacher-to-teacher was written by Bev Showers, Assistant Professor of Education at the University of Oregon. Ms. Showers' professional responsibilities include coordinating continuing education at the University of Oregon, as well as studying teacher inservice training under a grant from the National Institute of Education. The article focuses on methods of acquiring new teaching skills. The methods described are similar to those implemented in the Direct Instruction Follow Through Model throughout the country.

BEVERLY SHOWERS

by Beverly Showers

Research on the ability of teachers to acquire teaching skills and strategies has provided a set of training elements that have been very successful for teacher skill development. These elements include:

- The study of the theoretical basis or the rationale of teaching methods.
- The observation of demonstrations by persons who are relatively expert in the method.
- Practice and feedback in relatively protected conditions (such as peer teaching and micro-teaching).
- Coaching (the provision of feedback, analysis, and adaptation to students as teachers try new skills in the classroom).

The training literature focuses on "tuning" already existent or latent skills and mastery of teaching patterns which require additions to the existing repertoire of the teacher. Skills "tuned" often involve question-asking, praising, increasing student involvement, increasing time on task, and improving the clarity of lectures. Mastery of a teaching approach which is not in the "naturally developed" repertoire of the teacher requires the trainee to think differently, to organize instruction in fresh ways, and to help children adapt to and be comfortable with those new approaches.

Study of theory, observing demonstrations, and practicing with feedback, taken together, are sufficient to enable most teachers to develop a skill to the point where they can, when called on to do so, use it fluidly and appropriately. However, the development of skill by itself does not ensure transfer—actual use of the skill in the classroom. Relatively few persons will transfer newly acquired skills into their active repertoire and use them regularly and sensibly unless additional instruction is received. When an effective "coaching" component is added, most teachers will begin to transfer the new method to the classroom.

Each of the training components are important if skill is to be developed. Unless people develop skill in a new approach, they have little or no chance of adding it to their repertoire. Coaching without studying rationale, observing demonstrations, and practicing with feedback will accomplish very little.

The training components do not occur in a strict sequence or in isolation from one another. One might begin mastering a new approach to teaching by observing a few demonstrations, then examine rationale, observe more demonstrations, and begin to practice, but return frequently to rationale and further observation, and finally receive classroom coaching. Even at this point the teacher might continue to attend training sessions where rationale, demonstrations, and practice with feedback are used.

Coaching is critical to getting new skills actually used in the classrooms. The first function of coaching is to provide support and encouragement to another person during a difficult process. The coaching relationship allows mutual reflection, perception checks, and sharing frustrations and successes. Companionship provides reassurance that problems are normal. The often lonely business of teaching has sorely lacked the companionship that is possible in coaching teams.

Technical feedback should not be confused with general evaluation. Feedback implies no judgment about the overall quality of teaching. It is confined to information about the execution of relevant skills or strategies. Coaches point out omissions, examine how materials are arranged, and check to see whether all the parts of the teaching strategy have been brought together. Technical feedback helps ensure that growth continues through practice in the classroom.

One of the most important things learned during the coaching period is when to use a new skill appropriately and what will be achieved as a consequence. Determining when to use a teaching strategy can be difficult. The coaching context provides an opportunity for examining goals, curriculum, and appropriate use of the newly acquired skill.

Most of us can agree that coaching would be a wonderful addition to initial training of new teaching skills, but questions immediately come to mind. "Who will coach me?" "When will there be TIME to plan, observe, and discuss?" "Won't all this be terribly expensive?" There are no simple answers to these questions, but undoubtedly it is possible to implement coaching programs under existing constraints of inservice budgets and school organization.

First, other teachers would seem to be the largest, most accessible pool of potential coaches. Teachers who have participated in the same training to learn the same skills will have developed a common knowledge about and a language for discussing the content of their training. When teaching teams or at least pairs of teachers from the same school participate in a training session, they share a motivation to learn new skills which they can implement in their classrooms. They also share the necessary proximity for providing coaching to each other.

It is important that coaching skills be included in the inservice training (e.g., observation and feedback skills can be developed in the context of demonstrations and peer-teaching directly in the [training setting]. It is also important for policy-makers and school principals, who often control inservice resources, to facilitate time for mutual observation within a school by assigning teacher specialists, student teachers, and even themselves to cover a class one period a week. Teachers can arrange to have simultaneous planning periods during the school day. If no planning periods already exist, the time allocated for planning before and/or after school could be used once a week for mutual coaching conferences.

These extremely modest suggestions have a potential for greatly improving the use of inservice resources. Once districts understand the benefit of actual implementation resulting from inservice activities, the "costs" of fully utilizing the training in which they invest should seem small indeed. It is, after all, unrealistic to look for changes in student behavior (achievement, attitudes, abilities) after minimal teacher training that fails to include many of the basic elements of training and includes no follow-up training of any kind. Teachers are superb learners, as the training literature has demonstrated. But teacher mastery of new and difficult behaviors requires extensive training, practice, and coaching, just as it does for athletes, performing artists, or pilots.

Taking DI to the Community (Continued from Page 3)

perform correctly with all three general case components s/he was again tested with the 20 non-trained components. An experimental design was used to ensure that any effects seen could be attributed to this training strategy.

Results from this study show the power of DI with severely handicapped students. None of the students knew how to crimp-cut components before instruction. After learning the Single Instance component the students performed many mistakes on the 20 test components. Not only did Single Instance training *not* teach the general case skill, it actually taught students to perform errors. Only those few components in the set of 20 that were just like the Single Instance component were performed correctly. After training on the three general case components, however, errors dropped out, and nearly all the 20 non-trained components were performed correctly by each student. Training with the general case components resulted in students learning a general case skill.

This study indicates the importance of some basic DI rules. It takes more than one teaching example to teach a general case. In vocational skill training, as well as in teaching academics, it is necessary to select general teaching examples, and to make sure these examples sample the range of differences that may be encountered.

While we believe the superior performance of students following general case training was the result of the rules used to select training examples, it is possible that students performed better after general case training simply because general case training involved *more* teaching examples. To examine this possibility, and to emphasize the need to select training examples that "sample the range" Jeff Sprague conducted a study on teaching general-case-vending-machine use.

Jeff's study was much like Rebecca's in that a group of 10 vending machines were selected which represented all the different kinds of vending machines in town. Students from TMR classrooms who did not know how to use vending machines were taught with a *Single Instance* machine and tested with the 10 non-trained machines. Some students then were taught with three similar machines. These students got experiences with more machines but not with machines that sampled the range. Other students were trained with three machines that did sample the range of variation in such things as how the machine was activated and how the product was removed from the machine. Only those students trained with the three "general case" machines learned to perform successfully across the 10 non-trained test machines. This study demonstrates the importance of selecting both multiple training examples *and* selecting examples that sample the range of variation to be encountered.

These two studies are a beginning toward the application of the DI technology to vocational and community skill instruction with severely handicapped students. More work is needed to identify the rules that teachers should use for designing and conducting community-referenced programs, but the foundation provided by existing DI research should prove extremely helpful.

Direct Instruction is out of the classroom. It is happening today with severely handicapped people in their local communities. Recent research indicates that while the behaviors and settings in the community are different, many of the programming rules of DI will apply. Teachers of severely handicapped students need these rules to build community-referenced programs. Severely handicapped students need these rules to become more independent participants in their communities.

Approaches to Solving Math Problems

By Craig Darch
University of Oregon

Teachers are often faced with a decision of what specific curricula to use when teaching skill deficient students to solve story problems. Though some research has been done in this area, much of it is either unclear or too far removed from classroom applications. Simply, it does not provide the information teachers need when faced with daily decisions concerning how to improve student performance.

Two approaches are used most often to teach story problem solving in the intermediate grades. The first could be called the discovery or traditional approach. This orientation views problem solving as a generic process. In this view, problem solving skills are best taught with relatively broad procedures that motivate students and expose them to a variety of experiences. Story problems in addition, subtraction, multiplication, and division are viewed as vehicles to introduce students to the activities involved in the general activity of mathematical problem solving.

Educators often state that there is no magic formula to teach students to become good at story problem solving. Most common basal texts view solution of story problems as a complex mental process that involves visualization, imagination, manipulation, abstraction, and the association of related ideas. As pointed out by some authors, there is no easy or quick method for all students to learn the techniques. Most traditional basal series, consequently, emphasize that there is no one method that all students should use to solve story problems. Instead, they say, the solution must be tailored to the student's individual interests.

The implication is that students need a range of opportunities to engage in problem solving activities. Thus, the traditional approach aims to offer the student: (a) a range of potential problem strategies, (b) highly motivating activities based upon each student's background, and (c) group discussion of issues in problem solving.

The second approach to teaching story problem solving is the skill oriented method often referred to as a direct instruction or active teaching approach (Good, 1976). This approach is much more specific than the general discovery approach. Teaching young students to accurately solve story problems involving simple arithmetic operations is viewed as an end in itself.

The basic tenet of the Direct Instruction model is to develop instructional procedures that teach students as much as possible in the least amount of time. There are several components of the Direct Instruction model which shape the development of curriculum to teach students story problem.

With general case programming, students are first taught a strategy for working several word problems. From this, they can generate correct answers to a range of word problems they have never seen. This differs greatly from other instructional programs that teach students *several* problem solving strategies which students *do not* successfully generalize to new problems.

CRAIG DARCH

Instruction begins with an overt problem solving strategy. Initially, the teacher makes every step in the strategy explicit. During this stage the learner is prompted to perform each step involved in solving the problem. Because an overt response is required *at each step*, the teacher is in an excellent position to diagnose any problems that students are having in the instructional sequence.

Once students are firm in their knowledge of the steps in the problem solving strategy, the strategy is made covert. This means that the students are no longer required to respond overtly at each step. Eventually, students perform all steps of the problem without prompting. However, the overt phase lays the foundation for this shift to unprompted responding. Other important components that are included in the DI procedure are cumulative review, teaching prerequisite information, and fading instructional prompts.

In order to study the differences between the DI and traditional approaches to teaching word problem solving, fourth grade students in 6 elementary schools were screened to identify a sample of students who were unable to solve multiplication and division story problems, but who possessed the necessary computational preskills. Seventy-three students were identified and randomly assigned to one of 4 experimental groups: (a) Direct Instruction with a fixed amount of practice (DI-F), in which students were taught problem solving with DI procedures, and received a fixed number of practice problems (120 problems over 11 lessons); (b) Direct Instruction with extended practice (DI-ExP), where students were taught with DI procedures, but were given extra instructional and practice sessions if they failed to meet a mastery criterion on different lessons; (c) Traditional instruction with a fixed amount of practice (Trad-F), in which students were taught via traditional instruction procedures used in basal arithmetic series and in which they received the same number of practice problems (120 over 11 lessons); and (d) Traditional instruction with extended practice (Trad-ExP), where students were taught with traditional procedures but received extra instructional and practice sessions if their performance did not reach a mastery criterion on different lessons. For the Fixed Groups, instruction lasted for eleven 30-minute lessons over 11 consecutive school days. Up to 8 additional lessons (10 practice problems per lesson) were available to students in the Extended Practice groups.

The day after the final instruction session the students were given a posttest which included both the material taught (multiplication and division story problems) and subtraction and addition story problems. Ten days later a parallel-form maintenance test was administered to all students. In addition, a consumer satisfaction form was administered to the students to express opinions regarding the instructional procedures.

Instructional Material

Though the students in the Direct Instructional and Traditional groups received entirely different instructional methods, each contained several common threads. First, both instructional sequences were developed to teach strategies for accurately solving story problems in division and multiplication. In all groups the same multiplication and division story problems were used as problem examples. Another similarity was the use of detailed teacher instructions (formats) that carefully guided the teacher-child interaction. The purpose was to facilitate accurate implementation of both the traditional and Direct Instruction lessons. Finally, both traditional and Direct Instruction groups received a combination of teacher-led instruction and some independent activity in doing story problems.

Traditional Instructional Program

The traditional intervention approach to problem solving was a composite of four mathematics programs that were adopted by the State of Oregon for use in elementary level classrooms. This composite intervention had three components that were incorporated into the instructional program: (1) guided instruction, (2) independent practice, and (3) procedures for corrction of students' errors. A major purpose of traditional mathematics programs is to ensure high interest, involvement, and motivation with each individual student. To achieve this purpose, teachers ask students many open-ended questions during the lessons.

Guided instruction within the traditional approach included two components: (1) discussion designed to increase student involvement and motivation, and (2) presentation by the teacher of a strategy to solve problems by breaking the problems into manageable parts.

Generally, the teacher attempted to guide the group discussion with questions that served to help the students see the information in the problem. Typical questions were, "What numbers are given to you in this problem?" "Are there any key words that may help you decide what operation to use in solving the problem?" Regardless of the questioning strategy used, the teacher would attempt to include all the students in the discussion, giving special attention to any students who appeared to be having difficulty.

The second key element in the guided instruction was to teach students to make a systematic list of information and then to break the problem into manageable parts. This was an important aspect of the intervention, as it appeared in each of the four texts that were reviewed for this study. Each student was given a guide for analyzing and solving story problems. The teacher utilized the sequence to generate discussion for each problem. It also served as a diagnostic tool to identify and pinpoint the location of any problems the students were having.

The second component of the traditional teaching intervention was the independent work in which students were given worksheets made up of story problems. As students completed the worksheets, the teacher provided minimal help and only responded to questions. Students were asked to apply the processes and procedures they had been taught earlier.

The final aspect of the traditional treatment was the use of correction procedures. Corrections were developed from an analysis of the procedures used in the state-adopted texts. When students made errors, the teacher identified for the students the type of mistake made and ensured that each student was aware of the error (e.g., the teachers would often have the students restate the information that was provided within the story problem). The teacher used the opportunity to generate student discussion and questions about their specific mistake. Finally, the teacher guided discussion of other possible correct problem setups. During this time group discussion was encouraged.

Direct Instruction Approach

The DI intervention approach for this study closely paralleled the procedures that appear for teaching story problem solving in *Corrective Mathematics* (Engelmann & Carnine, 1981), especially the modules on multiplication and division. As with the traditional approach, guided instruction, independent practice, and correction procedures were used.

The guided instruction included modeling and explaining by the teacher of how to work various problems. Teacher questions were not open-ended. The sequence for introducing skills was carefully controlled. When multiplication problems were first introduced, students were taught to discriminate multiplication problems from addition. The rule students were taught to make this discrimination was: If you use the same number again and again, you multiply.

Next, the teacher introduced multiplication and division word problems. In one type, the word *each* or *every* appeared, signaling that the same number was used again and again and thus that the problem called for multiplication. After the guided instruction, the students worked the problems independently, receiving corrective feedback from the teacher if necessary.

Finally, the students were required to discriminate between addition, subtraction, and multiplication problems. As described earlier, the teacher initially guided the students through these multi-

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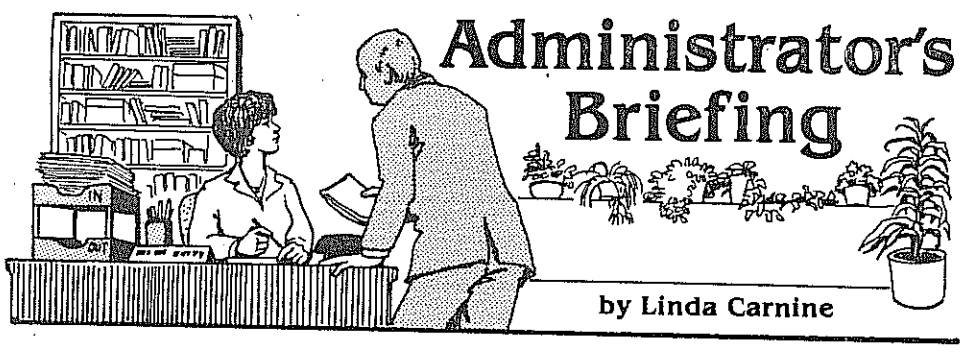

Administrator's Briefing

by Linda Carnine

Barriers to Educational Change

By Douglas Carnine

(Editor's Note: From time to time, News columns are guest-authored. This edition of the Administrative Briefing, contributed by Doug Carnine, is based on his full-length paper entitled Barriers to Increasing Student Achievement: What They Are, Where They Come From, and Some Thoughts on How They Can Be Overcome. *Its content here has implications for those of you attempting to implement structured programs in your schools. I hope you find this information useful, and I encourage you to submit your ideas for future columns. You may send them to me in care of the editors. —L.C.)*

> "The major studies of curriculum reform have shown that where training, the introduction of materials, vertical political solidarity, and staff and administrative commitment are brought together, there is considerable movement. Gradually, however, the school returns to the normative patterns which characterize most American schools and the innovations lose their steam. The problem is a worldwide one."
>
> (Hersh, Carnine, Gall, Stockard, Carmack & Gannon, 1981)

Even though teacher's greatest rewards have to do with serving their students (Dunn, 1980), innovative practices that help teachers better serve students are under-utilized or misused. The defenses operating to resist change may be labelled *discrediting, delaying, distorting,* and ultimately, *discontinuing.* We will discuss each of these, drawing in part from our fourteen years of experiences with Project Follow Through. The Follow Through experiment has provided clear evidence that Direct Instruction methods can be effective in overcoming educational problems of the economically disadvantaged (Becker & Carnine, 1980; Stebbins, St. Pierre, Proper, Anderson & Cerva, 1976, 1977), and yet many choose not to believe this evidence.

Discrediting

If an innovation is discredited, pressures to adopt it are minimal. Innovations are usually discredited through intellectual or quasi-intellectual activities such as attributing their success to unique factors not found in other settings, questioning the values represented by the innovation, questioning, criticizing and ignoring any evaluation that judges the innovation to be effective, or even claiming that the innovative practice has already been adopted when, in fact, it has not.

According to the uniqueness argument, the effective instructional program that operated for over a decade at P.S. 137 in the Ocean-Hill Brownsville section of New York could not work in P.S. 73, which is located only three blocks away — despite the fact that the program in P.S. 137 operated effectively for 12 years with 5 different principals, 4 different compensatory education directors and over 50 different teachers. If this view is true, scientific work in education is a contradiction in terms, since, to be valid, scientific knowledge must be true in more than one setting. What would be the reaction to a doctor who said that heart surgery could be done successfully on 14th St. in Chicago, but not on 11th Street? In education, people readily accept data showing that most students can read in one urban school while most students cannot read in another school a few blocks away, without ever considering that this may be due to the specific instructional processes going on in the two buildings. Early sociological data (Jencks and other, 1972; Coleman, Campbell, Hobson, McPartland, Mood, Weinfield & York, 1966) has been used to support the belief that schooling makes little difference, although more recently, even Jencks seems to be attributing more importance to the schooling process (Jencks, 1979).

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Undermining an innovation by questioning the values it represents is more subtle. "For the educationists, the doctrine of the whole child is the magical balm that washes away their sins. Ask a question about skills, and you get T.S. Eliot, transforming the question to one about values" (Lyons, 1980). The Direct Instruction Model, which has been relatively effective in fostering both academic growth and a positive self-concept in economically disadvantaged children was seemingly discredited on a PBS television documentary by a survey of principals who said that the program does not address creativity and other aspects of the whole child, and that while the programs' effectiveness was well known, it was believed to be insufficiently "humanistic," turning teachers and children into robots. One principal new to a building forbade two teachers to continue the program even though he had never seen it in use and even refused to observe the teachers using it.

Similarly, critics can claim that any evaluation of an innovative program is invalid because it doesn't measure what is truly important. As Anderson and colleagues state, "...Any program that wishes to rid itself forever of the discomforts of evaluation need only add to its list of objectives one metaphysical, obscure, or otherwise immeasurable purpose..." (Anderson, St. Pierre, Proper & Stebbins, 1978). Cognizance of both intended and unintended effects of

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Math Story Problems

(Continued from Page 6)

ple discriminations. Over time, the students were given increasingly more responsibility to complete the problems independently.

Division problems were introduced after students mastered the discrimination of multiplication problems from addition and subtraction problems. To determine whether a problem called for multiplication or division, students were first taught to discriminate division story problems from multiplication story problems. Students were asked to determine whether the big number is given in the problem. Students were taught to apply these rules: "If the big number is not given, the problem is a multiplication problem. If the big number is given, it is a division problem."

In the final step, students learned to discriminate between addition, subtraction, multiplication, and division story problems. To make discriminations, students applied the procedure of determining whether the same number was used again and again and then determined whether the big number was given.

As was the case with the traditional program, students spent time independently applying the rules they had learned to solve story problems.

The Direct Instruction sequence incorporated detailed correction procedures within all lesson formats. The initial step in correcting errors was to determine the possible cause of the error. When an error occurred during the presentation of a problem-solving strategy, the teacher generally implemented a two-step correction. First, the teacher would correct the specific error by modeling the appropriate response. Next, the teacher would prompt the students by asking questions from the previously taught strategy. After the student's mistake was corrected, the teacher returned to the beginning of the problem-solving strategy and presented all steps in the process again.

Results

When the experimental groups were compared on their posttest performance, the two DI groups performed highest with mean scores of 22.35 (85% correct) and 22.57 (85% correct). The two traditional groups scored significantly lower, 17.11 (65% correct) for the Traditional-Extended Practice sample and 16.46 (61% correct) for the Traditional-Fixed Practice sample. (See Table 1.)

When the four groups are compared on the 26-item maintenance test, a slightly different pattern emerges than on the immediate posttest. The Direct Instruction-Extended Practice group had the highest score with a mean of 21.73 (80% correct); the Direct Instruction-Fixed Practice group is a bit lower, with a mean of 19.35 (74% correct). The two traditional groups follow with 17.55 (65% correct) for the Traditional-Fixed Practice group and 14.26 (54% correct) for Traditional-Extended Practice.

Several interesting findings emerge from this research. First, on the posttest, regardless of whether extended practice was provided, the DI groups outperformed the traditional groups. Next, on the maintenance test, results showed that for the traditional groups, students who received additional practice actually performed at a *lower* level than those with a fixed amount of practice. This was not true for the two DI groups.

The results on the student attitude scale indicated that the Direct Instruction-Extended students: (1) felt they learned a lot from this unit; (2) enjoyed the method of instruction; and (3) stated that they made extensive use of the rules they had learned to solve story problems. The Traditional-Extended group members reported that they: (1) did not learn from the unit; (2) did not particularly enjoy the experience; and (3) did not feel they were able to apply the rules they had learned to actual story problems.

The teachers noted that the behavior of the traditionally taught students during the extra practice session tended to be disruptive. The DI students were reported to be more enthusiastic and more on-task during the extra practice sessions. One explanation for this difference is that practicing a strategy which has not been mastered (as traditionally taught students were required to do) is unpleasant, whereas extra practice resulting in success (such as that engaged in by DI students) is rewarding.

Apparently, acquisition, maintenance, and student satisfaction can all be best enhanced through Direct Instruction to teach story-problem solving to skill-deficient students.

Table 1

Percent Correct on Posttests and Maintenance Test

	DI		Traditional	
	Fixed	Extended	Fixed	Extended
Posttest	85%	85%	61%	65%
Maintenance Test	74%	80%	65%	54%
N	17	19	18	19

DI and Mainstreaming

By Lynn Anderson-Inman, University of Oregon

For the last several years public schools around the country have been involved in a profound reorientation of services for handicapped students. Underlying this reorientation in educational service delivery is the philosophy or principle of "mainstreaming." Although models for implementing this principle vary greatly, all are unified by their focus on providing opportunities for increased interaction between handicapped and nonhandicapped students during the course of a normal school day. To the maximum extent possible, this interaction should embody more than mere physical proximity to one another. The spirit of mainstreaming is best achieved when handicapped students have the skills and preparation necessary for them to: (a) benefit from instruction with their non-handicapped classmates, and (b) develop appropriate social relationships with students of similar age. As expressed by Kaufman, Gottlieb, Agard & Kukic (1975), mainstreaming is the "temporal, instructional and social integration of eligible exceptional children with normal peers" (p. 41).

In response to the mainstreaming movement, special educators have become increasingly concerned with preparing handicapped students, especially the more mildly handicapped students, to enter and succeed in regular class settings. In a similar manner, many regular class teachers have become more accommodating in their instructional practices and openly receptive to alternate teaching strategies. For both the special educator and the regular class teacher, direct instruction materials and procedures are emerging as useful tools to promote the successful adjustment of handicapped students in mainstream classrooms. Although the principles and practices of direct instruction evolved from a concern for the educational needs of low income and minority students, there is a growing awareness that handicapped students also benefit from the tight structure, careful programming, and systematic procedures of direct instruction materials.

Described below are six strategies for using direct instruction to promote the mainstreaming of handicapped students. Each is accompanied by a summary of some recent research supporting that particular strategy.

Special Class Remediation of Academic Skill Deficits

The use of direct instruction materials and procedures with handicapped students is probably most common in special education settings such as self-contained classes and resource rooms. The purpose of this instruction is to eliminate, or at least minimize, handicapped students' academic skill deficiencies. This instruction is often provided in the hope that elimination of skill deficits in the academic tool subjects (e.g., reading, math, and spelling) will eventually facilitate students' integration into regular classes on a more full-time basis. Although the use of direct instruction materials and procedures by special education teachers has become increasingly widespread, it is only recently that researchers have begun to examine the relative efficacy of direct instruction materials for handicapped students and the extent to which their use is beneficial in eliminating academic problems.

In a study by L'E. Stein and Goldman (1980) DISTAR reading materials were compared with the Palo Alto Reading Program on effectiveness with primary level students diagnosed as having specific learning disabilities. The 63 students in the study were between 6 and 8 years of age, attended private schools for "children with serious learning problems," and had difficulties maintaining attention and on-task behavior. Although all participating students had average or above average intelligence, their school records were characterized by reading failure, academic underachievement, and for many, accompanying emotional problems. All students were pretested using the reading subtests of the Peabody Individual Achievement Test (PIAT) and the diagnostic tests associated with their respective reading materials. Based on these results, students received instruction in small groups (2 to 3 students) for 60 minutes each day over a period of approximately 11 months. A comparison of pretest scores on the PIAT indicated no significant differences for the two groups before intervention. However, an analysis of their scores following instruction revealed superior reading performance for students using the DISTAR materials (significant at the .0001 level of confidence). Improved performance was demonstrated in both word recognition and reading comprehension. Clearly, the DISTAR reading program was more effective in remediating deficits in these students' reading skills than the Palo Alto Reading Program.

More important, perhaps, than the statistical significance between the two groups is the educational significance of the students' gains. The mean gain for students in the DISTAR reading groups, after receiving instruction for an average of 10.9 months, was equal to approximately 15 months of instruction on a normative scale. In other words, the handicapped students who received reading instruction using DISTAR materials were progressing *faster* than their non-handicapped peers on whom the PIAT was normed. With continued instruction using the same materials, and assuming a similar rate of gain, these students might easily be candidates for reintegration into regular classrooms in another year or two (providing, of course, that their other academic and behavioral deficits can be remediated in a similar manner). Although reading performance for students using the Palo Alto materials also improved during the period in which instruction was provided, their mean gain of 7 months during the 11-month period is insufficient to expect they would eventually "catch up" to their nonhandicapped agemates.

The authors attributed the success of the DISTAR reading materials to programming which reflects careful analysis of the reading task. Additional factors contributing to the superior effects of the DISTAR program might be the use of: (a) fast-paced teacher directed lessons, (b) unison responding and (c) systematic reinforcement procedures. These features would maximize the students' attentional problems and increase the probability of being on-task. Given the average or above average intelligence of the students participating in this study, eventual reintegration into public

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schools and even regular classrooms would seem to be an appropriate goal. For the students in the study, and others with similar academic problems, the above data indicate that the use of direct instruction materials by special education teachers to remediate academic deficits might well facilitate students' movement into successful regular class placements.

Regular Class Accommodation to Low Performing Students

As regular class teachers take on more responsibility for the academic achievement of handicapped students, there is a growing tendency to adopt curricular materials and procedures which accomodate students' needs and limitations, while at the same time teaching them effectively. Because of their suitability for teaching the handicapped, as well as other low-performing students, the principles and techniques of direct instruction have found a new home in many regular classrooms.

At the elementary level this may mean using published direct instructional materials for teaching some or all of the basic skills. These materials might be adopted for use with the entire class or only with the students who have demonstrated some difficulty with academic tasks. It has become increasingly common, for example, to find regular class teachers at the primary level who provide reading instruction to their low performing students using the DISTAR materials, while retaining the basal reader in use schoolwide for their better performing students.

In content area classes such as science and social studies, regular class teachers familiar with direct instruction have begun employing its principles and techniques to program their lessons, build in systematic review, design effective correction procedures, and maintain student attention while teaching. Special education teachers have often played an important role in this process by introducing direct instruction to regular class teachers, assisting them in efforts to incorporate specific strategies and reinforcing their efforts to provide more accommodative instruction in their classrooms. The net result is an instructional environment in which all students can learn, including the handicapped.

Support for the ability of handicapped students to thrive in regular classrooms where direct instruction materials are used comes from a study examining the relationship between IQ and academic achievement for students participating in the Direct Instruction Follow Through Project (Gersten, Becker, Heiry & White, 1981; also see *DI News*, Vol. 1, No. 1). The yearly reading and math scores were analyzed for approximately 1500 disadvantaged primary level students who received three or four years of basic skills training using the DISTAR materials. To explore the relationship between IQ level and yearly achievement, achievement test scores were placed into one of six groups based on each student's measured IQ at the time of entering the program. Each group represented a range of IQ scores (e.g., 70 & below, 71 to 90, 91 to 100, etc.). Comparisons were then made between IQ level and yearly rate of learning for all students.

Students in the lowest IQ block (70 or below) would probably have been found eligible for special education assistance had they been referred. The Direct Instruction Model, however, recommends teaching all students, regardless of entry ability, in regular classrooms. This avoids the stigmatization of labeling a student as handicapped and leaves responsibility for instructing all children with the regular class teacher. Although students' performance levels in a classroom may vary greatly, their individualized needs are met by providing instruction in small groups. The students in the lowest IQ block were therefore completely integrated with their classmates of average and above average IQ, i.e., mainstreamed. Were they able to make academic progress in the regular classroom?

The results of the analyses indicated little or no relationship between students' entry scores on the IQ test and the rate at which they were able to learn math and reading skills using direct instruction materials. In other words, students with low IQs were able to profit from the instruction provided to the

Handicapped Students

same extent as students with average or above average IQs. Although beginning and ending academic skill levels for low IQ students were generally lower than for other students in the program, the amount of material learned was about the same. Furthermore, the "growth pattern" was similar; characterized by a large gain during the first year (more than the norm), followed by standard yearly growth in successive years.

It is clear from the above study that low IQ students, students who might normally be labeled as handicapped, can survive academically in regular classes if instructionally effective materials and procedures are used. Direct instruction programs facilitate this survival by maximizing teacher-student interaction, minimizing the chance for erroneous learning, instructing students at the appropriate level of difficulty and focusing on mastery of content. This formula for the success of low IQ students was equally effective for their higher achieving peers, thus combatting the argument that the integration of handicapped students will negatively affect the progress of nonhandicapped classmates.

Special Class Preparation on Academic Support Skills

Success in regular classrooms seems to be dependent upon handicapped students having three types of critical skills: (a) social skills acceptable to teacher and peers, (b) content-based academic skills sufficient to cope with and benefit from the class curriculum, and (c) non-content-based academic skills such as working efficiently, seeking assistance, and writing neat assignments. This last set of skills, known as "academic support skills" is the focus of the University of Oregon's Project ASSIST (Academic Support Skills for Integrated Students).

Academic support skills are defined as those skills which facilitate a student's acquisition of content-based academic skills or a student's ability to demonstrate that content-based skills have been acquired. They are tremendously important for regular class survival and some have been found to be correlated with academic achievement. Since handicapped students spend much of their school time in highly structured educational settings, they are often unfamiliar with the support skill expectations of regular class teachers. In addition, many integrated handicapped students are not perceptive enough to identify their teachers' expectations correctly or capable of performing the required skills without specific training to do so. Providing direct instruction to handicapped students on the academic support skills critical for regular class success can be an effective way to promote their acceptance and adjustment in mainstreamed settings.

One of the preliminary investigations for Project ASSIST explored the use of direct instruction for teaching handicapped and disadvantaged students to produce written papers acceptable in neatness to regular class teachers (Anderson-Inman, Paine & Deutchman, Note 1). After observing in intermediate level regular classrooms, nine features (exclusive of penmanship) were identified as characteristic of "neat papers": (1) Use of margins, (2) starting on the front side, (3) proper placement of the student's name, (4) identification of the assignment's content, (5) leaving the sheet of paper whole, (6) no unnecessary marks or scribbling, (7) writing which stays on the line, (8) use of consistent spacing within & between sections, (9) neat and appropriate use of an eraser.

Scripted lessons using direct instruction formats and techniques were developed to teach all of the 9 skills found to be important for regular class acceptance of students' written papers.

Instruction was provided to 15 intermediate level handicapped and disadvantaged students in an elementary Title I resource room. Lessons were approximately 30 minutes in length and students received instruction three or four times a week for about 6 weeks. Each lesson was presented by the student's resource room teacher and culminated in a practice assignment simulating the demands of the regular classroom. To assist students in applying their newly learned skills to classwork outside the instructional period, a self-monitoring checklist was introduced after instruction on the first five skills.

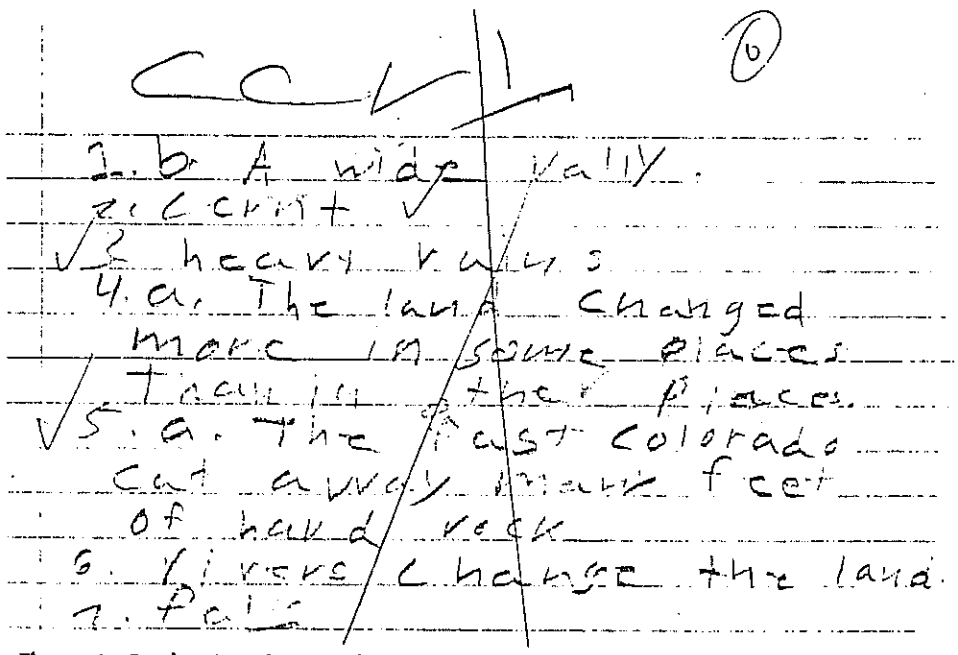
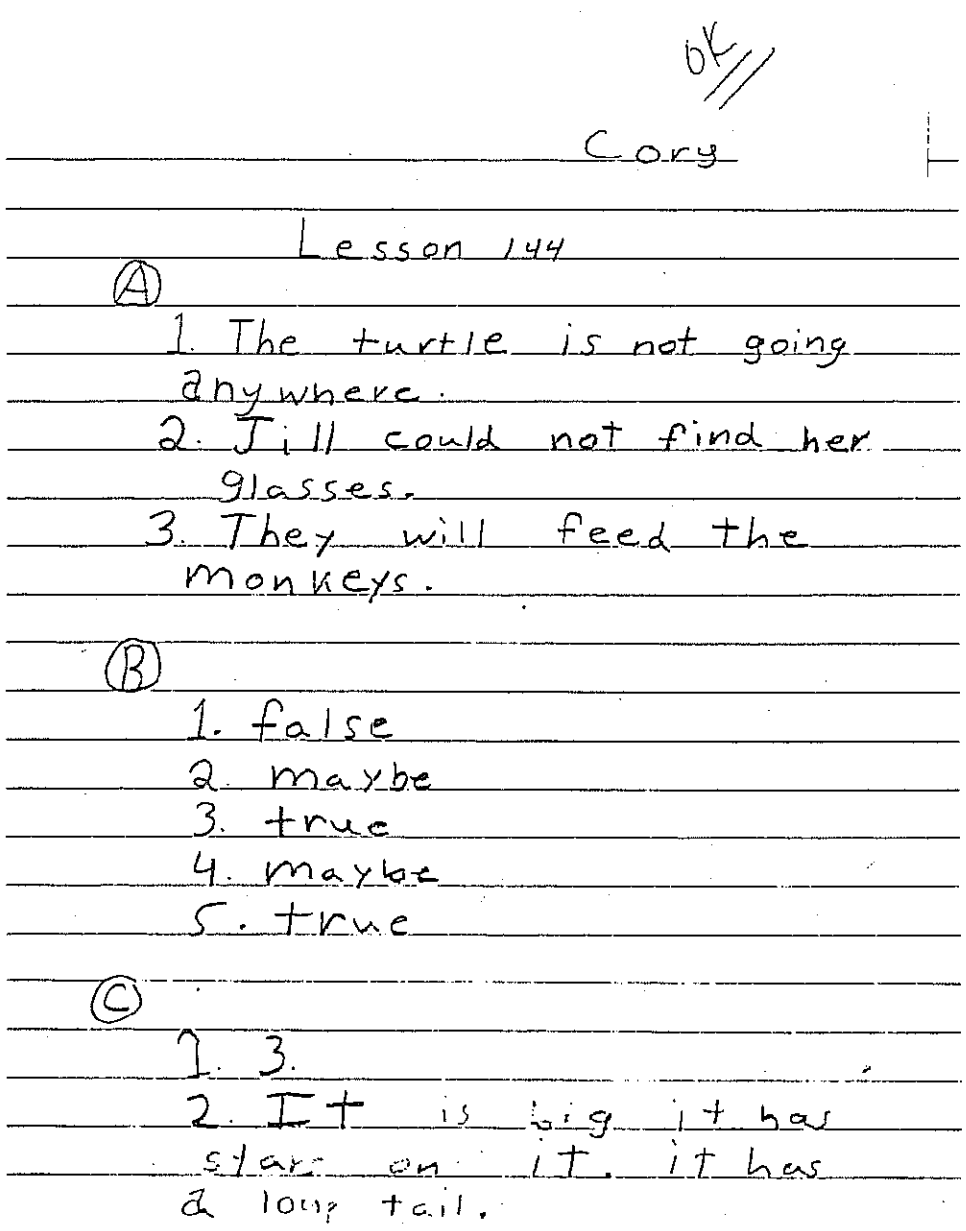

1. b. A wide valley.
2. correct ✓
3. heavy rains
4. a. The land changed
make in some places
travel in their places.
5. a. The fast Colorado
cut away many feet
of hard rock
6. rivers change the land.
7. fail

Figure 1 - Student's written assignment before direct instruction was provided and the self-monitoring checklist introduced


OK

Cory

Lesson 144

(A)

1. The turtle is not going anywhere.
2. Jill could not find her glasses.
3. They will feed the monkeys.

(B)

1. false
2. maybe
3. true
4. maybe
5. true

(C)

1. 3.
2. It is big it has star on it. it has a long tail.

Figure 2 - Student's written assignment following direct instruction and implementation of the self-monitoring checklist

Figures 1 and 2 present written assignments for one of the students who participated in the study. The change in neatness between these two papers is characteristic of the improvement demonstrated by all participating students. The use of direct instruction plus a self-monitoring checklist was clearly an effective strategy for promoting the acquisition of skills necessary to produce a neat paper and the transfer of these skills to other classroom situations. Being able to hand in written assignments of acceptable neatness could have a significant impact on the acceptance of handicapped students by regular class teachers. Writing neatness has been found to have an effect on teachers' grading of essays (Brophy & Good, 1974) and it is likely that neater papers elicit more specific feedback to students than messy, unreadable ones.

Regular Class Instruction on Academic Support Skills

Providing handicapped students with the academic support skills necessary to survive in regular classrooms need not be the sole responsibility of the special education teacher. Regular class instruction on critical academic support skills would, in fact, have several advantages. First, teachers of regular classes are more familiar with their own expectations and the skills required for functioning successfully in their classrooms. Second, by offering such instruction in the regular classroom, teachers would be able to assist all low performing students who are deficient in the necessary skills, not just handicapped students. Third,

Continued on Page 10

regular class instruction on academic support skills would minimize the problem of newly learned skills failing to transfer across academic settings.

Unfortunately, academic support skills are rarely part of the curriculum in regular classrooms. The majority of nonhandicapped students are believed capable of identifying teacher expectations in this domain and able to perform the skills required for success in their classroom. Therefore, curriculum materials for teaching most of the skills have never been developed. The use of direct instruction procedures to teach the academic support skills necessary for regular class survival *before* students begin experiencing failure could greatly improve the educational experience of the handicapped, as well as other low performing students.

A recent study in the use of direct instruction to teach academic support skills in the regular class focused on teaching fifth-grade students a strategy for studying content area textbooks (Adams, Carnine & Gersten, in press). Forty-five fifth graders with adequate decoding skills but deficient study skills were randomly assigned to one of three groups. Students in one of the groups were provided with four days of direct instruction on 600-800 word passages from a social studies text. These lessons were 30-40 minutes in length. Students in another group worked independently at their seats with the same materials for approximately the same amount of time. Students in the remaining group stayed in their classrooms and were not provided with either direct instruction or independent seatwork using the social studies text. The direct instruction training procedure taught students a strategy for studying content area textbooks which focused on using headings and subheadings to preview and rehearse a passage's important ideas and facts. Five study rules were taught and practice was provided using the rules to read a different passage each day. Oral use of the study rules was gradually faded.

Short answer and open retell tests were given to all students following the four training days and again two weeks later. Results indicated that students who had received direct instruction on study skills were significantly better at answering short answer comprehension questions than students in either of the other two groups ($p < .001$). This was true for the delayed short answer posttest as well as the immediate posttest. There were no significant differences, however, on the retell measures. Because such a large portion of school time is spent learning material from textbooks, it would seem imperative that all students, handicapped as well as nonhandicapped, develop good skills for extracting information from these sources. Classroom observations, however, indicate that teachers at the intermediate level spend very little or no time instructing students in appropriate study skills (Dunkin, 1978-79). It is therefore important that any recommended procedure be realistic in the time commitment required. The instructional approach used in this study could be implemented easily in any regular classroom. Only four days of 30-40 minute lessons were required to produce significant improvement and teachers could use the textbooks already in the classrooms.

Special Class Transfer Training

The mainstreaming movement has resulted in the increased popularity of part-time, pull-out programs such as resource rooms for mildly handicapped students. Inherent in the use of programs which provide special education assistance outside the regular classroom is the assumption that skills learned in one educational setting will transfer automatically to other educational settings. As the ultimate goal for resource room assistance is improved academic performance in the regular class, it is important to determine the extent to which such transfer actually occurs and to incorporate strategies for promoting this transfer if necessary. In the following study, the degree to which a newly acquired skill in reading comprehension transferred from special class instructional materials to regular class texts was explored (Perkins & Anderson-Inman, 1981).

Using *Corrective Reading, Comprehension B,* five junior high learning disabled students were taught a strategy for answering comprehension questions which required making a deduction from the material read. The students' ability to use this strategy when reading regular class content area texts was probed throughout the 10 weeks of instruction. The results indicated that three of the five students had no success and the other two had only moderate success in applying the learned strategy to regular class materials. To improve the extent to which these students could answer deductive type comprehension questions when reading regular class texts, a direct instruction transfer training procedure was developed.

The transfer training procedure focused on reading passages from 13 different regular class junior high textbooks and involved the use of two direct instruction formats. The training provided under both formats consisted of two parts: guided practice, completed orally as a group, and independent practice. The first instructional format provided introductory instruction and practice in applying the learned strategy for answering deduction questions when reading content area texts. It required students to read a passage from a specified text, find the deduction rule, and use it to answer the comprehension question correctly. When the strategy could be successfully used by students during the training sessions, more intensive practice on making deductions from expository material was provided. Using the second transfer training format, students were required to answer multiple deduction questions for each textbook passage. Sometimes this would require using the same deduction rule more than once and sometimes it would require students to locate multiple deduction rules in the same passage. This format attempted to simulate regular classroom expectations where answers to several comprehension questions may be found in close proximity.

Students received transfer training twice a week for 35 to 45 minutes over a period of 10 weeks for four of the students and over 4 weeks for one of the students. The effects of this training on their ability to answer deductive type comprehension questions from content area texts was probed at regular intervals. All students' accuracy improved measurably, and each achieved or surpassed the level felt to be indicative of successful use of the learned strategy (80%). Following this period, transfer training was faded to once a week and eventually eliminated completely. Students maintained the levels of accuracy achieved during transfer training, indicating the durability of the procedure over time. This suggests the students will be able to use the strategy for making deductions in the future and, hopefully, when asked to read and answer comprehension questions in regular classes. Although there is no assurance that the skill learned in the resource room will generalize to other settings, the research literature suggests that introducing regular class material into the resource room will promote the transfer of skills to students' regular classes by increasing the number of stimuli common to both the training and generalization settings (Anderson-Inman, in press; Stokes & Baer, 1977).

Cross Classroom Coordination of Instructional Assistance

In their attempt to remediate the academic deficiencies of mainstreamed handicapped students, regular and special class teachers have often felt it beneficial to augment the number of daily class periods devoted to a given tool subject. This is usually accomplished by scheduling a student to receive instruction in the same content area (for example, reading or math) in more than one classroom (for example, the resource room and the regular class). Although the intent of this practice is to help the student learn the skills addressed, differences in instruction in the two settings could confuse the student if the process is not carefully coordinated.

There is reason to believe, however, that a remedial program using multiple instructional environments, would not risk confusion if the content and format of the instructional presentations were tightly controlled. A study focusing on the math skills of seven mildly handicapped students, for example, revealed considerable cross classroom consistency in academic performance when instructional material format was held constant (Neubauer, Note 2). The scripted presentations of direct instruction materials facilitate this kind of control, thereby enhancing potential academic gains.

A more recent study examined the extent to which the use of direct instruction materials by different teachers in different classrooms resulted in consistent academic performance across settings (Anderson-Inman, Note 3). The reading behavior of one intermediate level handicapped boy was monitored in three classroom periods (all of which were devoted to instruction in reading) over a period of two months. The DISTAR reading program was used by all three teachers (resource room teacher, regular class teacher, and remedial reading teacher) and lessons were coordinated daily so that the student would receive instruction on the same lesson in each setting. The accuracy of the student's individual oral responses was recorded for all parts of the instructional presentations in a three settings. For those portions of th lessons which overlapped (i.e., the stu dent was asked to respond orally to th same grapheme, or word, or to read th same sentence in more than one setting the percentage of agreement in response was computed. This percentage in dicates the degree to which the student responses were consistent (i.e., th same) across any two settings on an given lesson. The results of the study in dicate a fairly high rate of consistenc equal to approximately 81%.

The real world value of this consistency in academic performance when using direct instructional materials i demonstrated in a study which explored the effects of resource room preteachin sessions on spelling accuracy in th regular class (Anderson-Inman, in press). The accuracy of both oral and written spelling responses wa monitored in the regular classroom fo one12-year-old handicapped girl and he non-handicapped peers over a period o approximately 11 weeks. Initial data in dicated she was performing considerably below the mean level exhibited by he peers, in spite of the fact that the regula class teacher was using a direct instruc tion spelling program, *Morphographic Spelling.*

In an attempt to improve her performance in the regular class, the resource room teacher began providing 15 to 20 minutes of supplementary spelling instruction in the resource room each day. This instruction was carefully coordinated with that of the regular class, i.e., it used the same instructional materials and previewed the lesson to be covered in the regular class later in the day. Because of the highly structured nature of *Morphographic Spelling,* the resource room teacher was able to match the regular class instruction in both content and format.

The effect of these preteaching sessions on the student's regular class performance was striking. Her mean level of accuracy for both written and oral responses improved markedly and approximated that of her peers. On a few occasions the accuracy of her written or oral responses even surpassed the mean level demonstrated by peers for that lesson. Clearly, the resource room preteaching sessions had helped her to become as competent a speller as many of her nonhandicapped classmates. Subsequent withdrawal and then reintroduction of the preteaching sessions established a functional relationship between supplementary resource room instruction and the student's spelling behavior in the regular class.

Results of this study support the research indicating that increased instructional time is correlated with academic achievement (Rosenshine & Berliner, 1977). That supplementary instruction can be provided in a setting other than the regular class, yet still affect performance in the regular class supports the use of resource rooms and the idea of "double scheduling" on critical skills. The results described above suggest, however, that supplementary instruction in other classrooms may be of maximum benefit to students only when it is closely matched in content and format with the demands of the target en-

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Mainstreaming

(Continued from Page 10)

vironment. Direct instructional materials facilitate the close coordination of instructional assistance by providing scripted presentations, thus allowing multiple teachers to use precisely the same verbal directions and practice activities to teach precisely the same skills.

Summary

Six strategies for using direct instruction to promote the successful mainstreaming of handicapped students have been described. Special class teachers have found direct instruction effective in preparing students for the demands of the regular class and regular class teachers have found it useful when selecting or modifying a curriculum to meet students' individual needs. These six strategies are not by any means exhaustive of the variety of ways direct instruction materials and procedures can be used to assist handicapped students to succeed in public school settings. If you have ideas and/or data to share pertaining to the uses of direct instruction when mainstreaming handicapped students, please consider sharing these with the author.[1] Perhaps a future article in the *DI News* could incorporate your experiences and suggestions, thereby expanding the possibilities of successful mainstreaming for other students, as well.

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Barriers

(Continued from Page 7)

an innovation is important. It is always necessary to limit the generalizability of an evaluation effort to what it measures. However, to reject an evaluation because it did not measure what may be impossible to measure (e.g., the inner feelings, aspirations, or creative potential of a generation of school children) is unreasonable. Nonetheless, an unpopular evaluation finding can be discounted by emphasizing what was not measured.

Another way of discrediting a successful innovation, one that may seem almost inconceivable to the naive reader, is to simply ignore its success. "Although pupil achievement data are routinely collected for individual students and are used to monitor their progress and determine their opportunities, the same data are rarely aggregated so as to provide a basis for assessing the performance of individual teachers, schools, or districts" (Meyer, Scott & Deal, 1979). By failing to aggregate data and compare progress across schools and classrooms, administrators relieve themselves of the responsibility to either provide remedies to low performing schools or explain why some schools are effective.

Delaying

Even if an innovation is not discredited, its adoption can be delayed. While delaying is characteristic of many fields, there are some exceptions, such as medicine, in which technological advances are often rapidly accepted. In one study, a miracle drug was adopted by 90% of the physicians in four communities within 17 months. Typically, the complete adoption of an educational innovation is at least ten times slower (Carlson, 1964). The medical comparison is probably unfair. Many past educational innovations have been fads that proved to be of little benefit. Thus, slow-paced adoptions have served to minimize useless disruptions to school systems. As valid practices become more prevalent in education, delay may become less of a problem, but that seems unlikely.

Distorting

No innovation is implementation-proof. Innovations that are not discredited and delayed can still turn out to be ineffectual as a result of extensive modifications. For an untried innovation, a process of adaptation seems reasonable; in fact, all things being equal, the more an innovation is adapted, the more likely its acceptance in a school (Berman & McLaughlin, 1975). Too often, though, adaptation becomes a euphemism for distortion. For example, Centra and Potter (1980) cited several studies of "team teaching" in which the investigators could not even identify which teachers were working in teams. The innovation had been transformed in such a way that it no longer differed from traditional practice. Another common occurrence is selecting only a part of the innovation for implementation (in the name of eclecticism) and then attributing the subsequent failure to the entire innovation. Finally, an innovative practice adopted by a district may never be implemented, because of what Charters and Jones (1973) refer to as the "risk of appraising non-events."

Sometimes distortion seems more like sabotage. For example, in one small urban school, an innovative program was adopted that required para-professionals and specific instructional materials. One year the central administration delayed hiring paraprofessionals for eight weeks, even though trained people and funds were available; over 3200 hours of instructional time were lost. A few years earlier, the same district delayed an order for essential instructional material for over six months, resulting in the loss of thousands of hours of instruction. Disruptions can also be effected by transferring key personnel to other schools or bringing in personnel opposed to the innovation.

Discontinuing

Innovative practices, even those that are eventually implemented and proven to be quite effective, are often discontinued. Rowan (1977) found that innovations that had the least to do with instruction (e.g., school health and cafeteria services) had the greatest likelihood of survival. Those indirectly related to instruction (such as guidance counseling, and psychological testing services) had a moderate likelihood of survival. However, innovations that actually dealt with instruction were the least stable, and were terminated most quickly.

Abandonment of a program by administrators can even occur in the face of public support. At a school board meeting for a small rural community, several parents testified in support of a relatively new, highly structured compensatory education program. One parent's three oldest children, who started school before the district installed the new program, hadn't learned to read. Later, two younger children, who had the benefit of the new program, tutored their older siblings. The parent was worried that her sixth child, only four years old, would be a school failure, too, if the program were dropped. Despite the district's acknowledgement that the program was quite effective with poor children, the board voted to discontinue it after teachers charged that the program was too structured and too narrow in outlook.

A Plan of Action

Reviewing case studies and theories of change as well as conducting assessment can help policy makers identify variables crucial to the success of an innovation and predict the conflicts that might occur during the change process. Based on that information, planners can then develop enhancement strategies to alter or work around anticipated barriers. These strategies are usually based on both authority and consensus (Greenwood, Mann & McLaughlin, 1975). Suppose most of the middle-level managers in a district (principals, curriculum specialists, teacher trainers) oppose the impending implementation of a major innovative practice. Superintendents might exercise their authority by visiting the project and making statements about its importance. For consensus building purposes, the middle-level managers might be paid to attend an out-of-town training session, attended by enthusiastic users of the innovation from other schools inside and outside the district. A combination of practical, common sense advice from session leaders, coupled with genuine testimonials from peers, could contribute to a willingness to give the innovation a chance.

Diplomatic negotiation with hostile middle-level managers is one possible way to forestall an innovation from being discredited. The general strategy is to anticipate how the innovation might be discredited and focus on those points — have potential adopters observe the innovation in action, talk to current users, review pertinent research reports and papers by popular "opinion leaders," and establish training programs in the innovative practice.

A different strategy is necessary in responding to delay. Situational leadership theory suggests that if an administrator is not interested or energetic about change, others must become task oriented and assume responsibility for planning and interaction (Hersey & Blanchard, 1977). As interest in the innovation grows, responsibility for the implementation can be shared even more. The work of Tannenbaum and Schmidt (1973) on leadership styles (selling, telling, consulting, testing, joining, delegating) is relevant to the process of shifting responibility to those who will carry out the innovation.

Sometimes distinguishing between reasonable, inevitable slowdowns and destructive delays is difficult. Once delays clearly begin to undermine the innovation, however, *pressure should be* applied. The push can come from above or from peers. Either way, a significant blockage must be removed or satisfactory implementation may never come about.

In deciding what constitutes a significant blockage, it is important to identify the critical, non-negotiable aspects of the innovation. Those aspects must be kept clearly in mind during installation. Otherwise, a harmless adaptation cannot be distinguished from a major dilution of the innovation. Since adaptations should be encouraged and distortions discouraged, the distinction is critical. Without protection from significant distortions, an innovation will quite likely fail. Conversely, fighting inconsequential adaptations can wear out everyone and create animosities among people who need to work together.

Knowing when and how to fight deviations is only part of the strategy for dealing with distortions. Another critical component is supporting genuine attempts to implement the innovation. Gersten and Carnine (1981) have identified several support tasks, culled from research on effective school and classroom practices. Some of these tasks are: (a) assessing how well the innovation is being implemented in each classroom, (b) procuring appropriate technical assistance, and (c) directing rewards and sanctions according to the quality of implementation. Since most principals are unlikely to carry out these tasks, responsibility for them must be shared or delegated. The principal might work in coordination with a school-level supervisor, possibly a lead teacher.

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The Graves of Academe

By Richard Mitchell

Boston: Little, Brown and Company, 1981 (229 pgs., $11.95)

Everyone has been exposed to considerable teaching of many different kinds, and everyone has views about what works. Most of the advice from persons outside the field of education is infeasible, useless, or obvious. Yet an outside vantage point sometimes permits a more objective view. People like Ziggy Engelmann and Rudolf Flesch are able to apply their knowledge from outside areas and come up with important new insights for education.

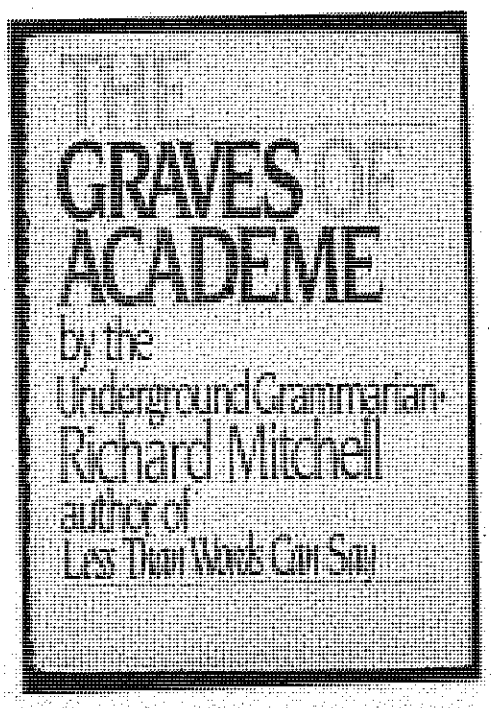
Like Flesch, Richard Mitchell (also known as the Underground Grammarian) is noted for helping people express themselves more clearly. And, like Flesch (author of *Why Johnny Can't Read* and *Why Johnny Still Can't Read*), Mitchell writes books about how we could be teaching better.

Mitchell's latest effort, *The Graves of Academe*, is a distinct contribution to the ongoing discussion of educational improvement. I see Mitchell as an old line academician who doesn't like all the changes in education which have taken place since he went to school. He criticizes some of the innovations which I support. But I find his overall view of contemporary questions to be very accurate, and his views generally complement a direct instruction philosophy.

Both Mitchell and the direct instruction philosophy favor using what works best in teaching academic skills; for example, using an intensive phonics approach in beginning reading instruction. Both emphasize cognitive areas, like the 3 R's and critical thinking, over more affective areas. Both think that the teacher, not the students, should call the shots in the classroom.

What is Mitchell's main point? That education is a bureaucratic behemoth that cares only about increasing in size — to the detriment of our society. Mitchell disdains "us educational sorts" too much to call us educators. He coined the term *educationist*. And he attributes this unwritten rule to the educationists: "Whatever we do will require more money, more teachers, more administrators, and more mandated courses in education."

One of Mitchell's examples of this constant bureaucratic growth is the area of learning disabilities. In response to countless schoolchildren's failure in reading, educators don't try to teach reading better; they create a new specialty area (learning disabilities) that ineffectually deals with problems *ex post facto*. This new area demands more tax dollars, more teacher training, more



faculty positions in the colleges of education, new regulations, and more administrators to interpret and oversee the regulations. The bureaucracy benefits from the status quo — poor teaching.

According to Mitchell, the educational bureaucracy is worse than other bureaucracies, because how we teach in schools affects how rationally the public thinks. And a highly educated public, states Mitchell, is the essential ingredient for the American society.

Mitchell also maintains that education is an unusually successful bureaucracy. Not only are laypersons duped into believing that the extra millions of school dollars and programs actually make a difference, but the educators believe the same thing.

While Mitchell recognizes the importance of education, he may overstate his case. There are other bureaucracies worse than education. Take defense. An appeal to national security is good for more billions in the federal budget than an appeal to education. The Department of Defense is at least as wasteful as the Department of Education. Defense specialists are probably every bit as sincere and dedicated in what they do as are educators. And with the military-industrial complex clamoring for all the federal money it can get, can we blame educators for advocating the importance of their field?

But let's face it, there's a lot of fat in the education budget — at all levels. The budget can't be trimmed indiscriminately, though. The trick is deciding what's fat and what's not. If legislators aren't careful, they might throw out the baby with the bath water. Mitchell makes plain some of the educational practices and programs that he thinks are fat. Usually I agree with him, but the issue is complex and Mitchell's surety frightens me.

Reading *The Graves of Academe* is an emotional experience. Mitchell's prose is incisive, his sarcasm scathing. On points that I agree with Mitchell, I'm intrigued by his wit and clarity:

> "One claimed theory is that since a teacher must be able to 'relate' to the students before any learning can happen, the teacher ought to be as much like the student as possible, very unlikely in the case of an especially intellectual teacher."

Here's Mitchell on the (lack of) logic if educational humanists:

> "Such absurdities must always occur when the mouth runs off in the recitation of precepts couched in vague generalizations and undefined terms. But they do not trouble the educationistic humanistics, who never seem to notice them. The important thing is that the precept *sounds* good."

Of course, when I disagree with Mitchell, his style offends me, as when he opposes the specification of instructional objectives. (They're new to Mitchell and he's seen plenty of nebulous objectives that aren't worth the paper they're printed on.) Upon reflection, though, Mitchell's Proxmirian efforts placate. Some specific charges are misplaced, but as a whole the charges bring about more good than harm.

Richard Mitchell writes on a more general, abstract level than fellow writer Flesch. Mitchell is short on examples (with the exception of infrequent straw men) and data that support what he says. His conclusions are so dependent on a chain of previous points that when his logic fails (as it occasionally does), his entire argument tumbles down like a house of cards. Like a school system's spiral curriculum, Mitchell tends to cover the same points periodically, yet indistinctly, throughout. And even when Mitchell's suppositions are logically reasonable, he fails to simplify and explain them in detail so that the layperson — the person Mitchell should be trying to reach — can understand.

The Graves of Academe shows Mitchell to be an armchair quarterback full of worthwhile notions. Despite the inadequacies, the book fulfills its role. The Underground Grammarian is waging war on many of the same practices in the educational establishment that we're fighting. He merely attacks them on a strategical level, leaving the tactics to us.

— reviewed by W.A.T. White

Curriculum Materials Handbook

By Meredith D. Gall

Boston: Allyn & Bacon, 1981. (127 pp./ $11.50)

Gall's *Handbook for Evaluating and Selecting Curriculum Materials* is a potentially useful book for those who make curriculum selections for schools (teachers, administrators, curriculum specialists), for those who have an interest in which materials are selected (parents and school board members), and for those who teach about or want to learn about the materials selection process (professors and students). The book is predicated on the assumption that educators are not typically trained in the process of materials selection; its purpose is to provide a resource to those who want to become proficient in this aspect of education. The book fulfills this purpose well by tying together much of what is known about the curriculum selection process.

The book is presented in six chapters and a series of practical appendices. In Chapter 1, Gall does a fine job of outlining a rationale regarding the importance of selecting good instructional materials. The essence of his logic is that effective instruction requires both good teaching *and* good materials. Much has been said about effective teaching in other publications, but little has been said about the importance of good materials in providing an effective education. Since the benefits of good materials can not be realized unless they are in use, the issue of their selection becomes the bottom line. Although good materials can not compensate for poor teaching, they can extend the efforts of an average teacher by structuring his/her presentations more fully. Weak materials can only lessen the results of one's effort (Engelmann, 1982).

A distinct highlight of Chapter 1 — and of the book — is Gall's overview of research related to the importance and the selection of good curriculum materials. This section nicely integrates important research findings which previously were scattered throughout the curriculum literature and begins to lay an empirical base upon which Gall's many guidelines and suggestions are built.

Chapter 2 outlines the steps in the selection process — from an identification of school needs to the consideration of copyright and censorship issues. Chapter 3 discusses accessing various materials by means of materials catalogs and other sources. While this proce

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DI On Line

By Dixon & Siegel

(Continued From Page 1)

ricula. An ambitious in-house development project, however, is devoted to the development of curricula in accordance with Direct Instruction principles of instructional design. That project is called the PLATO Curriculum Project (PCP), and is directed by Martin A. Siegel, a long-time protege of Siegfried Engelmann.

Through our development of curricula for PCP, we have found that the application of Direct Instruction design principles to computer-based education is a natural extension of DI development efforts. This is not surprising. Although Engelmann uses many examples of his design principles that imply a teacher-directed presentation, the substance of such examples assumes only that the "teacher" — human or machine — is appropriately responsive to student performance. Though computers rarely respond to student performance in any but the most simplistic ways, they *can* respond appropriately when told to do so.

For example, we have developed a sequence of lessons on verb recognition. In the final, expanded practice phase of that sequence, students literally underline, on line, the verbs in randomly selected sentences that test a wide range of the concept "verb." Literally hundreds of specific error possibilities exist in this relatively complex choice-response task: failure to underline all the parts of a complete verb, failure to recognize a "be" verb or other linking verb, failure to recognize all the parts of a complete verb in a question, assigning too many words to the verb, and so on.

In our lesson sequence, we identified over fifty different significant error *types* and provided a different feedback for each of those error types. The criteria for determining error types included considerations such as the type of verb involved, the sentence structure involved, the specific response made by the student in relation to each item type, errors within corrections, and level of prompting.

Once a student makes any one of the possible errors, the lesson automatically creates a unique review sequence for that student to insure delayed testing across increasingly longer time periods. If students do not achieve mastery in a reasonable number of trials on the longest-term delayed test (which rarely occurs), the lesson automatically (and literally) waves a flag in front of both the human instructor and the lesson authors. The instructor can then try to remediate the current problem, and the authors make an immediate adjustment in the design of the lesson that is implemented for all users within a matter of days — and often within hours.

The elaborateness of the above sequence is not due primarily to the complexity of the concept being practiced, but to the fact that "verb" actually represents more than one concept. The expanded practice, therefore, is in reality the consolidation and discrimination of highly similar, but different concepts. Our data indicate that few errors are actually made during this phase of the instruction. Whenever errors are made, however, the lesson responds appropriately and effectively.

We would like to indicate more generally how computers can be utilized to effectively and efficiently address the correction of errors.

The design of initial teaching presentations in Direct Instruction is extremely complex. Teachers using Direct Instruction materials, however, need not concern themselves directly with those complexities, since all the details of sequencing, item selection, juxtapositon, response mode, prompting, and so on have been worked out in advance of the instruction according to Engelmann's stimulus-locus analysis principles. Perfect learners would respond perfectly to faultless instructional communication forms. In reality, however, learners rarely respond in completely predictable ways even to teaching demonstrations which are analytically flawless. In short, we can never be sure which students will make which mistakes on which tasks.

In order to respond optimally to a student's mistake, the expert Direct Instruction teacher would consider several questions. Did the student make a discrimination mistake, a response mistake, or a combination of the two? Could the mistake have been the result of inattention? Did the mistake occur within an initial teaching sequence? Is this a chronic mistake? Are the mistakes being made predominately on one subtype? Different answers to each question and different combinations of answers imply different correction procedures — procedures which often amount to an "on-the-spot" creation of instructional sequences. Teachers must attend directly to *these* complexities, which accounts for the seemingly disproportionate amount of time dedicated to corrections in Direct Instruction teacher-training workshops.

For purely pragmatic reasons, Direct Instruction corrections pose two types of problems relative to teacher-directed instruction. The first is training teachers to do all of the appropriate correction sequences and *when* to do each. We are referring here not to corrections found in the guide portions of the various DI programs, but to the more elaborate, more generic and wider range of optimal corrections described by Engelmann and Carnine in *Theory of Instruction*.

Compounding this first type of problem is the possibility that students will make errors within a correction sequence. Consider the following correction sequence, used for chronic discrimination mistakes that occur within an initial teaching sequence on items of the same subtype:

a. Firm on the original sequence.
b. Construct a sequence containing examples of the subtype of items missed.
c. Firm the learner on this sequence and parallel sequences if necessary.
d. Firm the learner on the sequence in which the mistake orginally occured.

Mistakes can occur in any of the firming steps of the above correction. The appropriate "sub-corrections" are generally quite simple, but knowing when to use them, which to use, and where to return in the orginal correction sequence is no trivial matter for a teacher who is trying to attend constantly to students and to keep good pacing.

Neither is step *b*, constructing a sequence, a trivial matter for a teacher who is trying to keep good pacing, especially when the sequence is a "noun" sequence and novel instances may not be readily accessible.

We hasten to point out that these problems are not *caused* by DI design principles. Rather, they are caused by the implementation of optimal design principles in a less than optimal educational system. The ultimate solution of these difficulties for teacher-directed instruction is a political/economic solution: provide for better teacher training, more in-service time, better supervision, and more favorable teacher-student ratios.

A more immedately practical alternative is to implement Direct Instruction in computer-based education. Current computer technology is such that the complete array of Direct Instruction correction sequences can be appropriately used without the attending difficulties discussed above. First, every DI correction procedure can be stored in the computer's memory for instant retrieval under the appropriate circumstances. Second, those circumstances can be defined precisely: sequence types, item types and subtypes, response mode, number of errors per item type, error type, and any other factor relative to correction sequence selection can be programmed into instructional lessons. Third, "pools" of extra items can be created and called up into a sequence if novel sequences are required. Fourth, students can be branched instantly to earlier instruction or other remedies if errors occur within a correction sequence, and be returned automatically to the appropriate place in the original correction.

Naturally, the prerequisite to computers delivering such optimized instruction is that the designers of computer-based instruction have a facility with the design principles such that they can tell the computer precisely what to do and when to do it. The disappointing performance of computer instruction that Fisher identified is not a question of computer capability, but of instructional design competence, a situation not unlike that found in non-computer modes of instructional delivery.

We are a glass half full. On the one hand, our development of Direct Instruction for computers is convincing us that even inexpensive microcomputers are capable of delivering extremely effective and efficient instruction on a genuinely individualized basis. On the other hand, the general willingness of instructional designers, other educators, and publishers to understand and struggle with a system of instructional design as sophisticated as Direct Instruction appears to be severely limited. We do not anticipate seeing the widespread availability of quality computer-based education or computer-assisted instruction until quality instructional design becomes widespread.

Gall's Handbook (Continued from Page 12)

frequently produces many programs for possible consideration, state or district adoption lists usually limit the number of actual contenders.

In Chapters 4, 5, and 6, Gall presents strategies for analyzing and appraising the materials which have been identified. His "inventory of descriptive features," which includes 39 program features and more than 100 specific questions, seems potentially helpful for discriminating between programs. Fifty-four percent of the questions deal with publication information and physical properties of the materials — items which are not directly related to the effectiveness of the programs. Forty-six percent of the questions deal with matters of content and instructional formats. This imbalance of emphasis seems to be characteristic of most commercially available materials, as well (Engelmann, 1982). Ideally, content and instructional variables would account for at least three-quarters of the reasons for selecting a given program. If we could construct, validate, and gain widespread use of a set of criteria which discriminated between instructionally effective and ineffective programs, and if we used these criteria in conjunction with those proposed by Gall, we would have an extremely powerful curriculum selection tool.

The appendices contain guidelines, sample policies, catalog inventories, checklists, and evaluation forms related to materials selection. In particular, the sample curriculum policies are potentially quite valuable for those interested in establishing or revising policies for their own programs. Additionally, the book is well indexed, and its tables and figures are clear and helpful.

I believe that this book is potentially useful to those involved in the curriculum adoption process — particularly when used in conjunction with program design principles (Engelmann & Carnine, in press) and program assessment criteria (e.g., Silbert & Carnine, 1981) described elsewhere.

Engelmann (1982) has detailed the instructional characteristics of the four most commonly used basal reading programs in the intermediate grades and found them to be grossly lacking on dimensions related to effective teaching. We need materials selection procedures which discriminate between these programs and more effective ones. As long as educators continue to purchase programs which are effective in teaching only high performing students, publishers will continue to market only these programs, and average and slower learning students will continue to perform at average and below average levels. When educators learn to judge programs on the basis of characteristics which actually make a difference in learning for all students, we will begins to have an impact on the programs which are made commercially available. In dealing with the selection process in a systematic manner, Gall's book represents an important first step toward that goal.

Reviewed by Stan Paine

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Effective Schools (Continued from Page 1)

Social Organization

Schools are social entities whose purpose is purposeful learning. As with all social groupings, their organizational existence is dependent on adherence to some minimum *common* sets of values, norms, beliefs, expectations, rules, and sanctions. Some refer to this as a school's "ethos." Others call it "community."

Whatever term is selected, it is important to note that there is a need in a school for such shared agreement on rules and the like because it is the existence of common understanding and assent which creates the foundation for trusting and respect for others — the glue of social and moral intercourse. The research suggests that schools which are most effective create a distinctive sense of community within the school building, a community derived from conditions which profoundly affect how and why educators and students treat each other, how much that precious commodity time is valued, and how well academic and social learning skills are integrated.

Clear Academic and Social Behavior Goals. Effective schools have articulated a clear school-wide set of academic and social behavior goals. Basic skill achievement in reading, writing, and mathematics is heavily emphasized across the entire teaching staff as is student behavior which promotes an orderly classroom and school climate. There is no ambiguity. Teachers, parents and students share the same understanding of the school's goals.

Order and Discipline. Administrators, teachers and students understand and agree to basic rules of conduct. Each person may expect that such rules will be uniformly enforced, be they rules against gum chewing, running in the hallway, hitting another person, or showing disregard for school property. The attitude of each teacher is that "I have the right to enforce the rules even if the student is not in my particular class."

The concern for an orderly and disciplined school climate is not meant to be oppressive. The 1960s critics of oppressive schools made their point so well that the pendulum has often swung too far the other way with the result that the quest for "open" schools and classrooms has frequently ended in near chaos. Effective schools seem to find that happy medium between discipline which is too rigid or too loose. The solitude of a tomb is not required but neither is the noise of a circus tolerated. Effective schools recognize order as a social necessity, not too much order as to snuff out spontaneity and individualism, but enough to get on with the business of learning. When asked, students in effective schools tell you that the rules and teachers are fair, even if they don't like the rules or penalties.

High Expectations. Teachers and administrators in effective schools hold higher academic and social behavior expectations for their students than do teachers and administrators in less effective schools. High expectations carry several messages. First they symbolize the demand for excellence and tell the student "I think you ought to and can achieve." High expectations are stars to reach for. Second, they communicate to the student that the teacher cares by saying, in effect, "The reason I have high expectations for you is that I care about you." Third, high expectations serve as the adult world's professional judgment which is translated by the student as "I am really more capable than even I at times think I am. If my teacher continues to have high expectations for me even when I screw up, then maybe I really can do better."

Teacher Efficacy. Effective schools have teachers who have a strong sense of efficacy — a belief which says, "I *know* I can teach any and all of these kids." Efficacy is a sense of potency, and it is what provides a teacher with the energy needed for relentless and persevering effort required to get many students to work. A sense of efficacy combined with high expectations for one's students communicates powerfully to students that they can learn and that they will learn, or dammit, we will both die trying!

Pervasive Caring. Students in effective schools tell you that their teachers and administrators care about them. One child, when asked, "How do you know your teacher cares?" responded, "Because she gets mad at me when I don't do my homework or do poorly on a test."

Caring is expressed in a variety of ways. High expectations, strict but fair enforcement of rules, and homework assignments, for example, all tell the students that the teacher is paying attention to them and cares about their achievement.

Observers of effective schools see the caring atmosphere in the informal patting of children's heads, the rigorous demands of a high school English teacher symbolized by blue-penciled essays, and the staff's collective celebration of a student achievement. Teachers, administrators, and parents too know when a school is a caring place for students and say so when asked.

Public Rewards and Incentives. Effective schools have a system of clear and public rewards and incentives for student achievement. Public display of excellent student work, honor roll, assemblies to honor student excellence, notes sent home to parents, and verbal and non-verbal praise from teachers as often as possible serve to motivate and sustain students' achievement of a school's high expectations for them.

Administrative Leadership. Effective schools have administrative leaders, most often principals, who are active advocates for and facilitators of the above set of conditions. Such leadership does not mean that the principal, for example, must do the curriculum revision, or be the master teacher, or conduct the teachers' evaluations; rather, it means that the principal is a person who helps to make sure these tasks are carried out appropriately. Such a person initiates dialogues concerning expectations, school-wide rules, and the establishment of a good testing program. Most essentially, with such leadership, the administration is seen by both teachers and students as supportive, caring and trustworthy, all of which helps create conditions for excellence.

Community Support. Effective schools have been found to have more parent and community contact than less effective schools. Contact with parents is not limited to concerns of truancy or misbehavior. Parents and other community members are engaged in school beautification programs, tutoring, fundraising, and just plain being kept informed of school expectations, successes, and failures. Effective schools usually have more positive parent-initiated contacts than do less effective schools.

Instruction and Curriculum

"Instruction and curriculum" refers to that part of schooling which is most familiar to the public. For example, the results of the post-Sputnik revolution in schooling (with its increased emphasis on math and science, its extension into the new curricula, inquiry teaching, open classrooms, and mini-courses) were all highly visible and publicized alterations in the instructional and curricular patterns of the past two decades. Only recently have researchers begun to understand the mechanisms underlying the strengths and weaknesses of some of the components of these patterns. Clearly all of the factors previously discussed as part of the social organization of the school overlap and complement the instructional curriculum. I have labeled these two sets of attributes separately only for the sake of convenience in this discussion.

High Academic Learning Time (ALT). Not surprisingly, researchers have found that up to a point the more time one spends on a learning task the more one learns. Although this sounds perfectly obvious and perhaps hardly worth mentioning, this rediscovery is actually more complex and very important.

First, researchers have found that in many classrooms teachers may *allocate* a great deal of instructional time (for example, reading instruction) but the students are behaviorally engaged in learning how to read (reading, reciting, doing worksheets, etc.) for only a small fraction of the allotted time. Several studies show that second and third grade teachers might allocate two hours per day for reading instruction, but upon observation of their classrooms, one could see students spending an average of only 12 to 15 minutes a day in learning how to read! Thus, allocated time, or teachers' *intended* time for instruction, has been shown not to be the best indicator of what covers effective instruction.

Consequently, a more precise measure of time has been substituted for allocated time. Called "time on task," this is a measure of how much time students actually are engaged in the study of a particular subject or skill. However, although this measure approximates more closely the actual time a student spends on a learning activity, it does not reveal whether or not the student is successfully learning while engaged in that learning task. Imagine a student who has great perseverance and spends many hours trying to read a history book in class which is four grade levels above his reading level. Clearly this mismatch of instructional material and time on task would not correlate with effective, much less efficient, learning.

Finally, therefore, researchers have arrived at the notion of Academic Learning Time (ALT). This is the amount of time a student actually spends on a learning activity in which he or she is achieving a high rate of success (90 percent or better) at that task. ALT takes into account the amount of time well spent and requires assessment not only of the time dimension but also of the appropriateness of the curriculum and measures of success. The key research finding here is that effective schools have much higher ALT ratios than do less effective schools. This means that not only do teachers in more effective schools waste less class time in starting and ending instructional activities but they select curriculum materials which are most important to student abilities. (Ten minutes of lost instruction in each high school class per day totals at least one hour of lost instruction every day, 180 hours per year, over 500 hours for three years of high school. Given that an average high school course requires about 180 to 200 hours of in-class instruction per year, 500 lost hours is considerable.)

Frequent and Monitored Homework. Teachers in effective schools, after fourth grade, require more homework more often *and* provide students with feedback about how well their homework was completed. Homework, up to a point, tells the student that learning is more than just a schoolroom activity, that expectations go beyond minimum effort, and that independent learning is valued. Perhaps equally important, homework increases ALT. By checking homework and providing students feedback, teachers tell students that they care about whether or not it is done (part of the incentive and caring dimension of schooling) as well as find out how well the students are learning on their own.

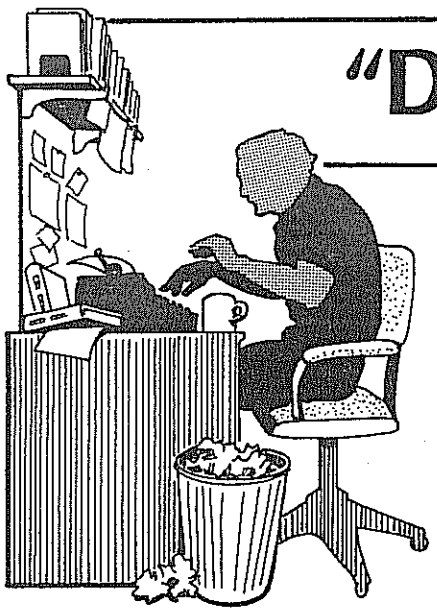
Frequent Monitoring of Student Progress. Administrators and teachers in effective schools monitor student academic progress more frequently than do staffs in less effective schools. Such monitoring consists of a combination of more frequent classroom tests and quizzes: formal and informal; written and oral; school-wide, district-wide, and national. Most emphasis is placed on frequent in-class monitoring coupled with direct and immediate feedback to students. Such frequent monitoring serves an important diagnostic function, prevents students from falling behind, and tells students that what is being taught is important.

Tightly Coupled Curriculum. Effective schools have a curriculum which is closely related to both school-wide and individual grade-level objectives. Teachers do not rely solely on commercial products but tailor or create materials and activities to meet the agreed-upon goals. The need for a tight connection between curriculum and objectives is perhaps best illustrated by a recent study which found that the five most widely used standardized test items in the U.S., in fourth-grade math, had no more than 60 percent correspondence with any of the three most popular selling fourth grade math textbook series. Effective schools purposely link goals, curriculum, and evaluation devices in a tightly coupled way to avoid the common mismatch in testing and teaching.

Variety of Teaching Strategies. Several studies have found that teachers in effective schools use a greater variety of teaching strategies than teachers in less effective schools. That is, teachers in effective schools are able to accomodate better to student differences (as measured by frequent evaluation) by employing an alternative teaching strategy when students do not seem to be succeeding.

Continued on Page 1

"Dear Ziggy"



Dear Ziggy:

You advocate such teaching practices as "repeat until firm," extended practice, and criterion teaching time, yet all of these things take time — often a great deal of time. How can a teacher possibly set *and stick* to a balanced schedule and still do all the "firm-up" activities you advocate?

Ziggy Says:

I wish I could tell you that all you had to do to be a success with every student was to go through the motions once and *shazam* — everyone would have mastered the content forever. Unfortunately, that's not the case, and that's why we must consider many options for getting additional instruction and practice to students within the constraints of time. Here are several ideas for beginning to get more out of the time available.

First, *maximize your instructional time.* Determine how many minutes are in your school day. Subtract the length of lunch and recess periods. Next remove the amount of time that you and the students spend in organizational activities (opening activities, bathroom and drink breaks, and other times in which you are not directly teaching and the students are not learning or practicing part of the established curriculum). Then discount transition time, the time *between* scheduled activities. What is left is the available instructional time, and in many classrooms, it is surprisingly meager. You might not be able to do anything about the length of the school day or of lunch and recess periods, but you can strive to minimize organizational and transition time in your classroom, thereby maximizing instructional time. Also, you can often turn organizational activities into instructional ones by presenting flashcards, story problems, or factual questions to students as they line up for recess, hang up their coats, or wait for the bus for a trip.

Next, within the instructional time that you can carve out of the day, *maximize students' opportunity to respond.* This can be done by using unison responding and by increasing your instructional pacing — even when you are not presenting a formal lesson. It can also be done by distributing students' practice on recently taught skills across various times, settings, and contexts of the school day, as described above, and by recruiting peers and volunteers to provide additional tutoring time to students who need more extended practice than you can provide directly.

Finally, *ensure that your schedule reflects your priorities.* Having a balanced schedule does not mean that you must devote equivalent time to all parts of the curriculum. It means that the time given to specific subject areas should be commensurate with the importance of that subject. If students are having difficulty mastering some of the basic skills, borrow a few minutes from other curriculum areas periodically to provide additional teaching or practice time. Or go all out — take a few minutes from art, music, P.E., lunch, recess, or opening activities and schedule an additional criterion teaching session in the afternoon. I don't think you'll notice any skill decrement in the areas from which you take time, but you *will* notice the improvement in the skills which are firmed. Make the most of every minute; your investment of effort will pay dividends in students' success.

Barriers (Continued from Page 11)

With concentrated thought and effort, practices based on effectiveness research can become institutionalized. Schools would then assume greater responsibility for utilizing effective practices while still fulfilling institutional requirements.

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Savings for New Members

Normal membership covers the period from September 1 to August 31. To encourage new members to join during this period of growth, all new memberships received between April 15 and August 31, will be credited with membership for the following school year (i.e., through August, 1983).

Effective Schools (Continued from Page 14)

Opportunities for Student Responsibility. Effective schools provide students with more opportunities for engaging in responsible behavior. Such opportunities include student government, hallway monitors, discipline panels, peer and cross-age tutoring, and school fund-raising projects.

* * *

Each of the attributes above has been shown separately to exist in some effective school studies. However, it is important to note that simply creating one, two, or three of such conditions at random would not necessarily result in a more effective school, measured at least in academic achievement terms. The more important conclusion that one draws from the research is that it is the cumulative effects of these conditions that has payoff. Although no one has shown which ones or how many of the above conditions are necessary and sufficient to guarantee an effective school, observers of such schools suggest that there is an element of synergy involved. That is, it seems that one has to do many things at once to do one thing well. It would be folly, for instance, to believe that simply increasing teacher expectations for students would necessarily lead to increased ALT or teacher efficacy. But in combination, many of the attributes above may help create a critical mass of conditions which serve to better promote student achievement. We are unsure as yet as to what variables such a critical mass comprises, but the story of Marva Collins, a Chicago elementary teacher recently portrayed on CBS' *60 Minutes*, perhaps illustrates the point to be made here.

A Chicago elementary teacher for 10 years, Ms. Collins by her own admission had failed in her attempt to teach black children in Chicago's public schools. So she quit, only to open her own 35-pupil school in her house. The *60 Minutes* program shows her as the supremely successful teacher in her new setting, and it is instructive to note her new teaching conditions. First, the children were sent by parents who chose her school, and most paid extra for the privilege. Second, the students knew they could and would be expelled if their behavior did not match the teacher's standards. Third, Ms. Collins was a bear for time on task, eliminating recess and such "frills" as physical education. Fourth, she held very high expectations. Fifth, she had a high sense of efficacy.

The best summary of this literature was recently articulated by T. Tomlinson, a research associate with the National Institute of Education, in the educational journal Phil Delta Kappan. He states that school resources are not the first or generic cause of learning.

"The ability and effort of the child is the prime cause, and the task of the schools is to enable children to use their abilities and efforts in the most efficient and effective manner. In the last analysis, that translates as undistracted work, and neither schools nor research have discovered methods or resources that obviate this fact...

"We should take comfort from the emerging evidence: It signifies a situation we can alter. The common thread of meaning in all that research has disclosed tells us that academically effective schools are 'merely' schools organized on behalf of the consistent and undeviating pursuit of learning. The parties to the enterprise — principals, teachers, parents and *fait accompli* students — coalesce on the purpose, justification and methods of schooling. Their common energies are spent on teaching and learning in a systematic fashion. They are serious about, even dedicated to, the proposition that children can and shall learn in schools. No special treatment and no magic, just the provision of the necessary conditions for learning."

Tomlinson reminds us that in the end it is what students do that ultimately causes student achievement. All the conditions, all of the attributes I have discussed are the context for maximizing student effort.

Finally, I find it hopeful that the conditions for effective schooling are in our control, that more than money, it is a will for excellence that may best serve as the catalyst for school improvement.

Orange County Florida DI Project

By Sharon Ralph

Recently the Orange County Public Schools received a four year federal grant entitled DIBS (Direct Instruction in Basic Skills). School administrators, teachers, parents and citizens recognized the need for solid foundation in teaching the basic skills in the elementary school (K-6). This grant enables the DIBS project staff to design, develop, implement and validate a comprehensive model for delivering effective basic skill instruction in the areas of reading, mathematics and oral and written language. The model will be based on the use of proven direct instruction methods and materials and non-direct instructional materials that will be adapted to the project. To provide assistance to as many students with diverse learning needs as possible, the instructional program will be reinforced by incorporating essential principles of precision teaching and classroom behavior management.

The program will be closely monitored and validated to provide data indicating the effectiveness of this model in teaching the basic skills. The validated processes and products from this project are being developed in a way that can easily be adapted or replicated by other schools.

The project will present examples of procedures for coordinating and integrating the model program with other programs serving similar target populations (Florida Compensatory Education and Primary Education Program, Title I, Title VI). These integration efforts will provide for efficient use of federal, state and local basic skill-oriented resources and prevent a student from being fragmented by many different programs and resources. The design of this program attempts to ensure that students in need of the DIBS project services will not continue to "fall through the cracks" in terms of elegibility and expected achievement.

During this four year project, Princeton Elementary School will serve as a demonstration school as well as the pilot school for the preservice and inservice components developed for instructional and ancillary personnel. The second year three schools will pilot test the developed and documented procedures, and the third year the procedures for these schools will be validated. During the fourth year the validated program will be prepared for state and nationwide dissemination. With the involvement and concern of Orange County Public Schools and citizens in our community, the DIBS Project provides an answer to many students needing a firm foundation for learning basic skills.

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The DIBS Staff Development Program

By Margrette A. Chert and Pam Abrams

The intent of the DIBS Staff Development Program is two-fold: one, to assist teachers in identifying and remediating the behaviors which inhibit the school success of those children referred to as "educationally disadvantaged," and two, to change the classroom teacher's role and instructional style as (s)he provides services to that population.

The content of the staff development components was designed to address the instructional needs of those children falling outside the mainstream of the educational system. This population is often referred to in literature as "educationally disadvantaged," "culturally deprived," "slow learner," "educationally naive," etc. Although these children come into the system from varied backgrounds, i.e. minority language groups, racial and ethnic minorities and isolated rural environments, the overriding factor attributable to all is poverty. Inclusion in most subgroups characterized by lower socioeconomic status appears to decrease chances of school success for the children. The needs of this population are the focal point of this staff development program.

Distar and CRP training. Training in the Distar and CRP programs usually involves one-half to one full day of group training as defined in the Science Research Associates (SRA) Trainer's Outline for the program to be trained. The teacher's effective implementation of these programs can be facilitated by systematic observation, demonstration and conferencing after the initial training. The "Follow Up Training and Assistance Plan" was developed to meet this need.

Behavior management. Selected principles of behavior management supplementary to the direct instruction model are presented in this component. Teachers are given experience identifying and modifying antecedent and consequent events that aid in the management process. Special attention is given to appropriate reinforcement techniques and procedures designed to decrease inappropriate behavior.

Direct Instruction. The principles of direct instruction are presented in these sessions. Teachers are taught the steps in the direct instruction model and are asked to practice the skills necessary in implementing this style of instruction. The application of the principles and instructional style to a variety of curricula is demonstrated by example.

Basic skills. Teachers are asked to review certain fundamental considerations involved in teaching the four basic skill areas: reading, math, and written and oral language. Examples and practice are provided for alternative ways of teaching basic skills.

Precision teaching. This component contains information relating the use of precision teaching as a supplement to the direct instruction model. Teachers are given the opportunity to write specific behavior pinpoints as well as to count and chart behaviors. Sample learning pictures are used to provide the teachers with the experience of making decisions regarding instructional change.

Join the ASSOCIATION SAVINGS for New Members!

Normal membership covers the period from September 1 through August 31. To encourage new members to join during this period of growth, all new memberships received between April 15 and August 31, 1982, will be extended through the following school year (i.e., through August 31, 1983).

Options: 1. Association membership, includes *DI News* subscription.
2. *DI News* subscription only.

It is still not too late to become a charter member of the Association. Categories include:

a. Student membership. . . $7/year (includes DI News and a 40% discount on ADI sponsored conferences and 20% discount on publications.)

b. Regular membership . . . $15/year (includes DI News and a 20% discount on all ADI sponsored items and events)

c. Sustaining membership . . . $30 or more/year (helps to insure our survival)

ADI sponsored products and events include books and other materials published or marketed by the Association (DI Reading, DI Mathematics, Theory of Instruction, Research on Direct Instruction), the Annual Direct Instruction Training Conference, and on-site training/consultation available from ADI staff or contractors.

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ASSOCIATION FOR DIRECT INSTRUCTION

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The Eighth Annual Direct Instruc Summer Training Conference wil held at the new Hilton Hotel in Eug OR, the week of August 16-20, 1 Both training and infomational sess will be offered by many of the lea DI authors and trainers. Several sessions have been added this yea help maintain the interest of people have attended the conference previ ly. Contact the Association for D Instruction, P.O. Box 10252, Eug OR 97440, for information about Conference. Contact the Hilton H 6th & Willamette Streets, Eugene, 97401, for lodging information or r vations.

Carnine to Address IRA

Douglas Carnine will presen general session address at the I England Regional Meeting of the I national Reading Association on Sa day, October 9, 1982, in Portl Maine. Contact Carnine at the Univ ty of Oregon (College of Educat Eugene, OR, 97403) or the I.R.A. more details.

5th Annual Direct Instruction Conferenc Kalamazoo, Michigan

16 - 20 August, 1982

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