A Summary of Four Studies

Instructional Design Principles for CAI

By John Woodward
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Enthusiasm over computers and their potential impact on special education can be demonstrated without much difficulty (e.g., Budolf, Thorannis, & Gras, 1986; Blaeb, 1987). Such enthusiasm is just part of a general eagerness by many to see computers widely used throughout elementary and secondary education. While most advocates are adept at detailing the technical capabilities of this medium (e.g., immediate feedback, automatic scoring, individualized instruction), little has been done in the way of systematic research into the use of computers—in particular, computer assisted instruction (CAI)—for the mildly handicapped. This report summarizes four studies we have recently conducted in this area. They are the beginnings of what we consider to be systematic research into CAI for the mildly handicapped.

The limited research on the instructional effectiveness of CAI for handicapped and non-handicapped populations is complicated and often contradictory. After a comprehensive search of the literature, Fornand (1982) concluded that achievement was rarely enhanced by CAI, even though students exhibited positive attitudes toward such instruction. We are not surprised by this finding, as little available software was used in special education settings makes use of even the most rudimentary principles of sound instructional design and effective teaching (cf. Stevens & Rosenshine, 1981; Engelmann & Carline, 1982; Brophy & Good, 1984).

In 1984, we began a series of CAI studies that examined different instructional design principles that have been articulated by Engelmann and Carnine (1982) and others. These principles have been empirically demonstrated as effective techniques in non-special education (e.g., Carnine, 1980; Carnine, Kameenui & Woolscott, 1982; Dorch, Carnine & Gerson, 1986) and in our fifteen years of experience with Project Follow Through (cf. Stelhins et al., 1977). Through computer assisted instruction, we were able to isolate the effects of review cycles, size of teaching set, explicit strategies, and correction procedures. We were able to do this in a variety of ways. Two of our studies examined popular, commercially available software that we developed. In another, we examined the effect of one variable (a correction procedure) by modifying our version of the software. In the last study described in this report, we used our software as an adjunct to a written curriculum to teach specific problem solving skills.

All of the studies described below were conducted with mildly handicapped secondary students. Students were screened for appropriate skill levels. For example, all students in the math word problems study were competent in basic operations through division and knew how to solve addition and subtraction word problems. Students whose skills were above or below this were not included in the study; those who remained were randomly assigned to conditions. Finally, in order to precisely measure academic development, tests were created for the specific skills taught in each study. The rationale and relevant details of each measure are described along with each study.

Vocabulary Instruction: Size of Teaching Sets and Cycles of Review

Many researchers, operating under the premise that word knowledge correlates highly with reading comprehension (Anderson & Freebly, 1981; Pear- son & Gallagher, 1983; Terrier & Cunningham, 1984), have attempted to improve comprehension skills by teaching vocabulary. Unfortunately, these programs which were most successful in teaching new vocabulary also required the most time to accomplish that task. For example, a study by Beck, Perfetti, and McKeown (1982) attempted to teach only 104 words in 29 thirtyminute lessons. At the end of the study, students knew an average of 85 words that they did not know prior to the program. This required 2,230 minutes of instructional time.

Generalized Compliance Training – An Update –

By George Singer
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The purpose of this paper is to review developments in the use of generalized compliance training since the initial publication of Engelmann and Colvin's 1983 book, Generalized Compliance Training. The paper will review developments in four areas: (1) legal and ethical safeguards, (2) administrative accommodations, (3) modifications of the procedure, and (4) research needs.

Background

Generalized Compliance Training (GCT) is a Direct Instruction program for teaching severely handicapped learner to follow directions presented by different people, in various places, and with a wide range of materials. The procedure is one of several compliance training programs that have been field tested and published (e.g., Forehand and McMahon, 1980; Caskie, 1982; Carr and Newson, 1983). These programs aim to bring children's behavior under the control of instructions from important adults.

Most children learn to follow common directions both to initiate appropriate behavior and to cease inappropriate behavior in the preschool years (e.g., Lyttton, 1980). When they do not learn to listen and follow verbal directions, they are at risk of becoming entrapped by a set of accelerating negative social interactions that have been characterized as coercion (Patterson, 1982). In coercive interactions, children and adults enter into escalating interchanges in which each tries to control the other's behavior with increasing aversive actions. These kinds of coercive interactions appear to be a common characteristic of troubled parent-child relationships (Patterson, 1982; Biglan and Hops, 1980) and troubled relationships between special educators and handicapped students (Carr and Newson, 1982).

Severely handicapped children appear to be at high risk for developing coercive social response patterns with parents and teachers. Most severely handicapped children are delayed in their development of expressive language. As an integral part of this delay they do not learn the normal social interaction rules that accompany any child's learning of receptive language. In addition, they also generally have trouble learning discriminations and, in particular, learning language and social discriminators that may have subtle stimulus properties.

Direct observations of mothers and young severely handicapped children suggest that parents do not consistently provide compliance with reinforcers and noncompliance with mild punishers as do successful parents of nonhandicapped and mildly handicapped children (Terdal, Jackson, & Carner, 1975). In addition, many severely handicapped students do not find the consequences that are commonly used in families and schools to be rewarding. In particular, some severely handicapped learners are not responsive to praise and attention as consequences for following directions.

Finally, many common tasks that are demanded of severely handicapped students represent difficult tasks. For example, an autistic student who normally attends to a task for no more than 30 seconds may be asked to watch TV or do a vocational task for five minutes. These tasks may appear to be meaningless from the parent's or teacher's perspective, but they may represent costly responses for the child.

Many children learn to get rid of such costly demands by noncompliance. Compliance training procedures are generally aimed at undoing such learned patterns. Engelmann and Colvin (1983), unlike other authors of compliance training programs, took the approach of teaching severely handicapped children who had already become entrapped in coercive behavior patterns. Such children may be unfamiliar to most readers because they have traditionally been removed from their natural environments and placed in institutions (Hill and Brimm, 1982). These individuals are often unresponsive to social demands and have engaged much of the time in self-directed behavior such as stereotypic rocking or hand-clapping, and they may explode into extreme violence when demands are presented.
Dear Editor:

Is there a new book by Wes Becker? If so, I'd appreciate publication information.

Thanks,
Marc arcadia
195 Bennett Ave.
NY, NY 10040

Dear Marc:

Wes has a book in the final stages with SFK. Its title is Applied Psychology for Teachers: A Behavioral Cognitive Approach. It is due out in early Spring. It covers classroom management, learning models, design of instruction, cognitive motivational processes, group processes, development, interpretation and use of tests, and more.

Editor

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Subscription Dates Changed

Effective immediately there will be a change in ADI's membership and subscription terms. Subscriptions will now run 4 quarters from the date of receipt instead of from September to August. This means if you join in March of 1986 your membership will expire in February of 1987.

The majority of memberships will still expire in August, after the conference, and we will continue sending out renewal notices throughout the year. If you have any questions regarding your membership or subscription, contact Dehli at our office.

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The Use of Corrective

By Edward A. Followay, Ed.D.
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Appropriate special education programs have not historically been widely available to handicapped adolescents. Special education at the secondary level has been hindered by the subject-orientation of instruction, the fact that most existing assignment, intervention practices, placement options arrangements, and teacher preparation programs were initiated for younger students, and the reality that handicapped adolescents often behave in ways that challenge the normal educational setting. Providing assistance (Epstein, 1982). However, after federal initiatives placed a high premium on special education for "ungraded" students of groups, special educators have increasingly accepted programs and curricula uniquely designed for handicapped adolescents.

Programs for older handicapped students have frequently represented a more extension of curricula implemented with exceptional students in the elementary schools (Merry, 1986). Consequently these programs have often been characterized by a remedial curriculum for existing basic skills instruction. In recent years the validity this model has come under increased scrutiny, and its effectiveness and consistency (see Alley & Deshler, 1979). Perhaps the greatest impediment to the implementation of remedial programs for handicapped students in middle or secondary schools has been the perception of reluctance to use the program for use with this population. One notable exception is the Corrective Reading Program (CRP) (Educators from Los Angeles, 1986). The principles of Direct Instruction (Carroll, 1980) and providing special education for older students who continue to experience difficulties in basic reading skills. The program has been used with upper elementary, middle school, and high school students identified as underachieving or mildly handicapped as well as with students who speak English as a second language (ESL).

CRP has not received the same degree of research attention as the other Direct Instruction programs geared for use with young children (e.g., DITAL). Several studies, however, have reported evaluations of the program's effectiveness. These studies collectively indicate that implementation of the CRP can result in improved academic performance in elementary-aged ESL students (Gersten, Brockway, & Hanes, 1983), junior high school underachievers (Campbell, 1983), cited in (Becker, 1984) and maladjusted students (Thorpe, 1978), and senior high school-aged disabled students (Gregory, Hackney, & Gregory, 1982). In one of the few studies with a population specifically identified as disabled (Lloyd, 1987) and his colleagues investigated the effectiveness of CRP with learning disabled students in grades 4-6 (Lloyd, Cullinan, Heins, & Epstein, 1980). They report that the LD students who received CRP evidenced significantly higher scores on measures of reading and language skills than those who did not.

The purpose of this study was to further investigate the effectiveness of CRP by analyzing its use with a population of learning disabled (LD) and educable mentally retarded (EMR) adolescents. In particular, the study focused on whether enrollment in CRP resulted in achievement gains of greater magnitude than had been accomplished during the prior year of schooling in other reading programs. This intra-subject comparison provided a measure of whether effective remediation could be accomplished by handicapped adolescents who had previously experienced minimal improvement in basic skills. In addition, the study evaluated whether handicapping condition interacted with the degree of success achieved by these students. This analysis would assist in determining the potential of the different methodologies with adolescents with variant categorical labels.

Method

Subjects

Students selected for this study were LD and EMR students within a rural/suburban school division in central Virginia. All students were enrolled in middle or secondary special education programs at the time that the reading program was implemented. Eligibility guidelines used for placement in learning disabilities and mental retardation programs were based on the standards of PL 94-142 as implemented by the Commonwealth of Virginia (Virginia Department of Education, 1980). Table 1 provides more specific data on the students participating in the study.

CRP was adopted by this school division for students in need of remedial assistance in this skill area. Classes consisted of students with varying abilities and different age levels. Each student participated in the program for whom sufficient data was available in terms of age and grade level were available was included in the analysis (78 LD and 41 EMR students). Curriculums

The Corrective Reading Program: Decoding series (Engelmann et al., 1978) was chosen because it embodied the principles of Direct Instruction. Specifically CRP-Decoding provides a carefully sequenced hierarchy of continuous skill drills and practice sessions. Progression through criterion-referenced tests provides lessons of about 45 minutes in which students receive immediate individual oral responses, as well as individual written responses; requires pupils to demonstrate and practice each skill before learning discriminations; and, incorporates reinforcement of improvement through verbal feedback and earning of points.

Procedure

The Corrective Reading Program when used with middle and high school students in this division was the core instructional program rather than the basal or elementary material. Prior to program implementation, sixth and seventh graders had typically been placed in a traditional basal program (most commonly Harcourt, Brase, Javanovich) while eighth through twelfth grade students were

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Continued on Page 3
Reading (SRA) with Mildly Handicapped Students

elective programs which emphasized the use of highly interest, low vocabulary materials.

In order to be eligible for the program, sixth and seventh graders had to be achieving at least three years below grade level, eighth graders at the fourth grade level, and ninth through twelfth graders at or below a fifth grade level. The program had been initially limited to fifth grade high school students, but was subsequently extended to middle school students because teachers had indicated that reading instructional materials at that level were inadequate.

Students were placed in either Level A or B of the program, based on the results of the Placement Tests. Students completing Level A continued to Level B. The majority of students who were initially placed in Level B spent the year completing that program, although a limited number did begin Level C. Small instructional groups ranging from four to eight students were formed on the basis of placement in the program.

CRP- Decoding was presented to teachers as an optional approach for teaching reading to middle and high school special education students. Full day in-service was provided on two occasions for all teachers who taught the programs. The initial workshop was held prior to program implementation to give teachers an overview of the format of the program and teaching techniques, as well as to provide information about placement testing, grouping, and scheduling. The second in-service was scheduled for the week before the fall term began and focused primarily on specific instructional techniques, lesson pacing, and other information needed for program implementation. Final decisions concerning placement in the program were made near the end of the fall term although several teachers did elect to begin the program somewhat later in the year.

Design

Students in the study were tested on the Peabody Individual Achievement Test, the standard measure used in this division as part of their annual evaluation, at the conclusion of three consecutive school years (1981-1983). Academic achievement scores for 1981 and 1982 reflected progress made under the prior reading curricula as discerned above, while difference scores between 1982 and 1983 reflected improvement made under the CRP. Academically handicapped students were included only in the study for Reading Recognition and Reading Comprehension with separate t-test statistics to compare the academic gains. For this analysis LD and MR subjects were combined to form a single treatment group. In addition the operation of differential effectiveness, an analysis of covariance was run using the initial achievement scores as a covariate to determine if significant differences on the two post-test measures (1982, 1983) were present. Separate ANCOVA's were run for Reading Recognition and Reading Comprehension.

Results

Achievement test data obtained from the series of three administrations of the Reading Recognition and Reading Comprehension subscales of the PIAT served as the dependent variable. Scores were available as post-test measures for the years 1981-83. These data are presented in Table 2, separately for LD and MR groups.

Overall Program Effectiveness

The initial question of overall program effectiveness was addressed by comparing gains prior to the implementation of CRP (1981-1982 school year) with gains made during the experimental year (1982-1983 school year) for combined LD and MR groups. Under the traditional program, the academic gains in Reading Recognition (CR = 0.109) and Reading Comprehension (CR = 0.128) were minimal. In contrast, the academic gains during the CRP were substantial for both Reading Recognition (CR = 0.370) and Reading Comprehension (CR = 0.300). t-test analyses indicated a significant difference between gain scores in both Recognition (p < 2.75; p < .007) and Comprehension (p < 2.43; p < .05). These findings support the position that the CRP program produced significantly greater gains than the traditional programs previously used in these classrooms.

Differential Program Effectiveness

To address the question of differential program effectiveness for LD and MR students, separate MANOVA procedures were run on the two reading measures using the initial test (1981) PIAT scores as a covariate. No significant group differences were found for the 1982 post-test scores for either Reading Recognition or Comprehension, thus indicating the LD and MR groups responded in a similar manner to the previously-used reading programs. A significant group difference was found for the 1983 post-test scores on Reading Recognition (F (3,127) = 9.47; p < .003) but not on Reading Comprehension. The significant difference indicated that the LD students improved more on Reading Recognition than the MR students.

Discussion

The data summarized above support the fact that CRP-Decoding had a significant impact on Reading Recognition skills of students and on Reading Comprehension. On both Recognition and Comprehension scores, gains for individual student groups ranged from essentially no positive change to several grade levels during the year than were enrolled in the program.

A key question explored in this study was the magnitude of reading gains achieved during the year in which CRP-Decoding served as the primary curricular approach. The mean gains of approximately 3 to 6 months for both Recognition and Comprehension are less than those found in some prior research. However, it is significant that the previously reported research did not include the same type of students as the current study. For example, Gersten and colleagues (1983) were concerned with primary-level ESL students. Studies by Campbell (1983), cited in Becker (1994) and Gregory et al. (1982) included older students that were not specifically identified as being in an ESL program. The findings reported herein are generally consistent with the results reported by Lloyd and colleagues (1981). Several limitations in the present research need to be noted. First, the pool of students under study show a somewhat fluid and fluctuation that was beyond the control of the researchers with some students entering in an out of the project school and/or being declassified from special education. Second, although teachers were adequately trained in the use of CRP, a substantial amount of variance was noted both in the competency level of the instruction and the achievement gains in students. It seems relatively safe to conclude that teacher competency was a confounding variable which could not be controlled for in this study.

Third, the use of PIAT scores as pre/post measures did not provide for the type of comprehensive evaluation that might be desirable. The risk remained that specific test scores for individual students could represent inflated and/or depressed estimates of actual achievement level. Anecdotally, teachers’ judgments were that the post-test scores were conservative estimates of the magnitude of the gains students achieved.

The current study presents an optimistic perspective on the effectiveness of remediation with older students. The data caution special educators not to assume that basic skills instruction should be forsaken with adolescent handicapped learners. The positive attitudes of the subject group and the program reinforce the potential for the incorporation of highly structured, Direct Instruction programs, such as CRP, into the middle and secondary school curriculum.

References


We Need More Contributions from the "Field" Such as those in this issue by:

SHIRLEY SIMMS
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CHARLES AUTHUR

DIRECT INSTRUCTION NEWS, WINTER, 1986
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upon them. Such children are few in number, but they place extreme demands upon their families and the community in terms of time, financial, and restrictive environments, and often do not benefit from public school special educational programs. As a result, they represent a major challenge to the field of special education and applied behavior analysis.

Many of the issues and concerns that have surrounded the use of generalized compliance training in the past five years have been directed at the characteristics of the population that has been served. Without exception, the services provided to these children have been directed at the elimination of specific, severe behavior problems in community settings. Wherever this has been attempted, regardless of the behavior management programs that have been used, parents and educators are often in- terested in generalizing the treatment to their community environments. These attempts have usually been constrained by the rapidity of change in treatment procedures. Thus, in part, generalized com-pliance training has been criticized because it has been used to treat a population of children that have been written off by most community services.

Like other direct instruction programs, Engelmann and O'Malley's Generalized Compliance Training (GCT) is a complex instructonal program based upon a careful analysis of the instructional universe that usually consists of verbal directions. At first these instructions are verbal and meaningful, in part to prevent possible misinterpretation. The learner at this early stage must learn to use the program properly. Such training is necessary because the program was developed for children who have learned to be extremely oppositional; it also uses an overcorrection paradigm. The program is not presented as a group program, students who do not follow direc- tions are required to stand up and sit down until they have learned to do so. Such procedures are necessary because these movements are complex and are usually accomplished by physically overpowering the learner while using verbal correcting.

Overcorrection has been widely used with severely handicapped children and has often, by itself, been an effective form of punishment (Fox and Bach, 1983).

GCT has been controversial because it has been used with a difficult population and because it includes a dramatic punishment procedure. In addition, because other aversive procedures have come under attack by advocacy and profes- sional organizations because they are seen as aversively ineffective, i.e., they cause the learner physical and psychological discomfort or distress (TASH Newsletter, 1985). Opponents of aversive procedures fear that such methods are widely misused and not limited to severely handicapped persons to abuse. Educators who have used GCT have faced criticism for their use of this controversial technique.

Legal and Ethical Safeguards

The use of GCT has proven to be contro- versial in a majority of the settings in which it has been implemented. In some cases, the controversy has surfaced in local newspapers; in others it has given rise to national levels of debate and public reviews. One result of this controversy has been the development of legal and ethical safeguards. In order to prevent accusations of abuse and ac- tual misuse of the treatment, school officials and community group home organizations have developed human rights review mechanisms (Irvin and Singer, 1985; Singer and Irvin, 1985). One school district has developed a Human Rights Review Committee (Singer and Irvin, 1985) that uses extensions of normal I.E.P. procedures to review the pro- cess and utilization of any in- trusive treatment with handicapped learners.

The Review Committee has been well received by parents and school personnel. In a recent survey of parents, all of the parents who were aware of the generalization compliance training and other potentially intrusive treatments. The survey revealed that the school district has accomplished the following safeguards before implementing intrusive treatments: complete and obtained full informed consent, (2) made a good faith effort to use less intrusive test behavior practices, (3) carefully developed and maintained the treatment efforts, and (4) proposed an in- trusive treatment that is the least restricted and group home organizations are described in detail in a manual by the authors (Irvin and Singer, 1985).

Administrative Accommodation

GCT has proved to be challenging to implement both because of the nature of the population served and the precision required to implement the program properly. To our knowledge, it has been implemented successfully in three regional school districts, three group homes for severely handicapped children and for severely handicapped adults. A short-term workshop program for severely handicapped adults, and in the private practice of three behavior therapists who work with families of handicapped children. At least 50 individuals have received appro- priate GCT treatments from quali- fied professionals. It has been used both to train students who were extremely noncompliant and to desensitize other aberrant behaviors such as self-injurious aggression, tantruming, ingesting of dangerous substances, fire setting, run- ning away, and breaking and tearing ob- jects.

In each of these varied settings there have been several common administra- tive issues that have required attention: (1) the need for clear high school administration, (2) the need for highly trained personnel, (3) the need for careful on-going supervi- sion, (4) the need to ensure that the need for an excellent teaching en- vironment as the context for compliance training is important. It is important to note that these concerns arise whenever this population is served adequately and when the techniques are being used. During initial phases of compliance training, students in class- rooms have required one-to-one aides. In group homes, a staff-to-client ratio of 1:3 or 1:4 is often required. However, this level of staffing has been faded after a period of from 1 to 3 years. In contrast, the rate increase in intrusive observations has not been withdrawn because of the rapid emergence of behavior problems when intensive programming is faded. Unfortunately, we do not have enough data to predict ahead of time who will succeed with less intensive supervision and who will not.

The need for highly trained personnel derives from both the difficult nature of the presenting problem behaviors and the complexity of the treatment pro- cedure. One school district has employed a program director or behavior specialist who is highly skilled and thus have had to find ways to fund such interventions to other who will implement it. (2) identify instructional errors by which are crucially important. Immediate feedback to staff regard- ing their implementation errors, (3) improve the level of program as needed, and (4) solve problems. The organizations use both on-going staff development and service training programs in GCT for their staff members. Training is on- going, with frequent supervisory feedback.

Finally, the procedure requires a good teaching environment as a basic context for the training. The instructional classroom environment is often over-stressed and may include levels of engagement, time, and skilled facility procedures, aptitude pacing, variation of stimuli materials, careful selection and sequenc- ing of materials, training for generalization, and regular review of materials. Intensive behavioral services are re- sponsive to provide. Programs that have not previously served this population have been quite intensive. Policy initia- tives to address the needs of this popula- tion, including levels of service. Policy initiatives to address the needs of this popula- tion, including levels of service. Policy initiatives to address the needs of this popula- tion, including levels of service. Policy initiatives to address the needs of this popula- tion, including levels of service. Policy initiatives to address the needs of this popula- tion, including levels of service. 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The Non-Negotiable Part of School Discipline Plan

By Geoffrey Calvillo, Ph.D.
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Principal, Casper, Wyoming

There is one component in a school discipline plan that cannot be excluded, parent involvement. The reasons for this are carefully planned for, the involvement may take forms that are not desired. The following notes are some verbal concerns that have reached a principal’s office.

“Your black playground lady disciplined my kid again I will tap dance on her head.”

If you don’t let Joe fight, I will whack his head.

“If your black playground lady disciplined my kid again I will tap dance on her head.”

“Mae’s got a very badly behaved child at home and at Sunday School and never has any problems before he came to your school. His color must be a problem with people’s folks.”

“Please get another bus driver...”

“...this one only sees my Lavoy doing awful things.”

“If you would start giving out better lunch food, maybe Cassey would quit going around the school.”

The following notes came from the principal’s desk:

“Miss地产 arrived at the office quite distressed and spilled a few tears. I told her I would visit with her as soon as the bell rang...”

Mrs. Smith followed me into my office. When I asked her to wait outside, she started in a loud, threatening voice that my office was public property and that she would stay.

Tim lost his cool completely in the classroom and was sent to the office. His mother was called and arrived at the school in 30 minutes. She visited with Tim and determined that he needed sweat and then proceeded to apply a goodly number (10) with my paddle. Ruth was sent in from the playground for fighting, making obscene gestures, cursing, delinquency and for being mouthy in general. Her (rather last) note which we must mean free because Ruth is the apple of his eye and she would never do something like that.

While it is possible to deal with these parent concerns as they arise, we suggest it is much more fruitful and certainly less stressful to have a systematic plan for involving parents in a behavior management system.

Such a plan would be comprised of the following components:

1. Involvement at the development phase.
2. Communication of the proposed plan.
3. Communication of services available in the School District.
4. Development of a parent training system.
5. Management of parent behavior.

Involvement at the Development Phase

There are several advantages of trying to involve parents in developing or revising the school discipline plan. If parents have the opportunity to participate in the development of the plan, then there is more likelihood that they will accept the plan.

b. By setting up a mechanism to require Input from parents (and staff) we are communicating not only that their opinions are valued but that it is necessary to have a plan. In other words, the process helps to sell the idea of having a school discipline plan.

c. While all parents may have the opportunity to participate, we know that the response will probably be minimal. However, when a situation arises that particular parents are hostile about some consequences that are directed to their child, then we can respond that they had the chance to input and will have another chance when the plan is reevaluated and revised. So until the plan is changed our policy dictates that we maintain the status quo.

d. Parents who have provided input into the plan can function as “allies” for us in dealing with hostile parents. This situation is particularly helpful where minorities are concerned.

2. Communication of the Proposed Plan

While it is important to invite parent input in the development of the plan and to respond appropriately to their input, it is critical to take several steps to disseminate the plan. The following steps are helpful:

a. Distribute copies of the plan to all parents. In addition we recommend that some kind of slip be designed to indicate that the parents have received a copy.

b. References can be made in newsletters that the plan has been circulated to all parents and that if any parent has not received a copy they should contact the school office immediately. Apart from ensuring that all parents have the chance to read the plan, this helps to curb statements like “I never knew that was a rule.”

c. It is important to frame rules and consequences in a positive manner. For example, it is better to use terms like expectations versus rules. Expectations communicate the notion of acceptable behavior whereas to some parents (and students) rules may communicate a challenge or an authority threat.

d. Parents need to know at what point in the discipline plan they will be required to become involved. It is best to have a hierarchy of penalties and after a certain point in this hierarchy parents become involved. Clearly there are exceptions to every plan. However, our point is that if you do not have a plan, then every situation will become an exception.

e. It is necessary to identify exceptions and let parents know in advance what those exceptions are. One obvious exception is serious behavior. For example, to a student who has stolen $100 off the cafeteria then parents would be notified immediately. It would be highly inappropriate to try to deal with such a problem at the school without notifying the parents. At this level it is important to have parents understand that for serious behaviors or problems parents will be notified immediately. Other exceptions involve judgment calls. Some parents will be informed whenever the child has problems, while other parents do not want to hear anything unless the behavior is serious.

e. Parents need to understand that in some cases being at-risk or a consequence is being negotiable. It is our task to communicate to the parents that inappropriate behavior is unacceptable and that the consequences can be negotiated. It does not matter whether the child is kept in after school or denied recess or denied other privileges. What does matter is that some consequence is applied and that it is being done in a manner that involves the parent in deciding the consequence for serious infractions.

3. Communication of Services in the School District

Many school districts have alternate programs for children who exhibit serious behavior or emotional problems over a long period of time. The typical model is that the student begins in the least restrictive environment, which is usually the home school. If behaviors still persist (given that the services in the

Generalized Compliance Training

Continued from Page 4

people, and unlikely to tantrum when alone with a trainer.

The teacher might also study the tantrums to understand how they originated. She might also examine her child’s behavior and develop strategies to prevent the tantrums from occurring.

Another area that needs to be carefully addressed is how to implement the last phase of a training program. The first step is to ensure that the learners are trained in the targeted areas. This can be done through a variety of methods, such as reading, watching videos, or participating in a group discussion.

Finally, as mentioned earlier, alternatives are needed to the overcorrection component of the GCT. In our experience, these procedures are necessary for working with older students and adults. Overcorrection is management efforts for this population because it is often difficult to physically enforce commands without risking injury to the subject or to the trainer. Therefore, it is important to develop alternative and effective ways to work with violent adolescents and adults must be developed.

The application of Engelman's in-service training model to the management of behavior problems holds great promise. The relative success of GCT as a treatment for a group of students who are unusually difficult to educate demonstrates this fact. We hope that relevant research and professional development efforts will be sustained enough to realize that promise.

References


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SRA
Understanding Computer-Based Education


A book is stimulating if it does just that—stimulates and prompts you to think about issues that you would otherwise not be interested in. While computers represent a new technology, an old one has been around for a long time. Computers are used to teach: How to get the job done effectively and efficiently. There are many issues associated with computers as an approach to delivering instructional content. In this way, the computer is supposed to do what the teacher would do in a traditional setting, deliver skills to students in a way that can be demonstrated through some sort of "test." The book opens with a short social history of computers. The first computers emerged in the industrial revolution. The machines that could perform routine operations more cheaply and more rapidly than humans. The Jacquard loom was the first. In the late 1800s, the punch card was invented. The computer is said to be a "test" case of computer-based education, specifically the Second Wave. The problem with the early (and often current) programs is that they are not really able to create the Second Wave machines were Second Wave people. The Second Wave emphasis is on a program that simulates, constructively, constructively integrates and tests the software and putting it into the computer so that it works. Kind of like building a car from junk parts or rewiring your house. The Third Wave users, those who are not computer programmers. Their interest in the computer was not to build the part of them that would make them do something useful, but to use them like most people use cars. They are not particularly interested in the simulator that may serve the set work and the questions are put to the test. They are similar to other students in the program. In education, the "test" of the user is in the test. The user is not interested in the test, but in the "test" of the user. In their own quiet ways, developers of Third Wave machines recognized that the needs of the new user were different and they came up with catch words which are not entirely meaningful to express how software for the new user had to be different from that designed for Second Wave consumers. The need for a "user-friendly" computer means simply that the interface is easy to use. More specifically, the program will interact in a more similar fashion than a "user-friendly" program will. Programs that are protected so that even if you do something dumb, you don't mess up the whole thing. Programs that place your data on the screen (instead of the manual).

As Siegel and Davis point out, "When you stop to think about it, however, the term (user-friendly) is actually rather strange. Of all the easy-to-use things we purchase, only computers and software seem to be described by this term. Who ever heard of a 'user-friendly' bicycle?" The term user-friendly describes Third Wave computer people talking to themselves, reminding each other that there are new needs for the Third-Wave consumer, but not quite knowing how to express the idea. The people who designed and market the machines are computer experts—with a Second-Wave education. For the user in the Third Wave, the potential is the important ticket. "As a result, our Third Wave users end up with something like a little machine, which is mostly bad and unfamiliar software—put in it. And that, in turn, is why so many new courses in computer education are being added to the school curriculum. . . . it can be fun and interesting to learn some programming if you want to, but there is a place for teaching develop programs in education . . . .

When it comes to the serious delivery of instructions, teachers can now be expected to develop programs themselves that they can be expected to develop their own book. . . .

Which brings us to the question of "computer literacy." If you're a do-it-yourselfer, computer literacy consists of learning such ugly stuff as "assembler programming." But as users of computers, not programmers we have different literacy needs. . . . We need a range of courses with titles like, "Using the Computer in Education." Even with very friendly programs there is a need for such literacy. Yet, as you probably know, if you've had the experience of taking a course on "computer literacy," we are still treated as mechanical not intelligent users with very specific needs. One very important notion that is not nearly exploited in the shop term "user-friendly," is that if the computer is to compete with the human machine the machine must be transparent. It must do its job in a way that doesn't call attention to itself. What should we know about the inner operations of the computer? Well, the computer does not teach people things. People build instruction into computer programs using the concepts of four tasks: They accept input, they store information; they manipulate that information (called the machine's "sort", possibly summarized); and they give you back the product of their manipulation as output. The Third Wave machines are basically a dumb instrument, a program that intelligently handles the "sort" but the computer behaves a lot like a teacher. It can interact with the student—tell him if he made a mistake—it can keep score on her performance, and sort items that she missed so they will be repeated in the sequence of activities that she follows (but not necessarily in the sequence that another learner follows). The computer can also keep score on how well the teacher performed and provide back-checking-management function for the teacher. Although teachers can do some things better than computers can, computers can guarantee achievement given appropriately designed instruction. Computers may also be better at sorting information. Unlike most teachers, they have total recall; however, they can draw only on information that has been specifically programmed into the task at hand. They cannot reach into their life experience for additional information and bring it to bear on the problem.

Instructed orientation systems can be classified in various ways. The two primary classification systems are based on their responses the learner produces and on the goals of the interaction. Classification systems according to learner response leads to categories like drill, tutorials, instructional games, simulations, and "programmed instruction." An instructional system that may have stronger implications for instruction is Taylor's system, which classifies activities according to goal. The computer may be a tutor, a test, or a tool. Neither classification system does much for the teacher. The thing that happens in the chapter that explains these systems is the illustrations the authors present. Some of the examples are from PLATO programs developed by S. G. Smith, who has to be one of the cleverest instructional programmers around today. Smith not only knows his content; he knows how to translate it into "smart" things that can be taught using intelligent exercises. Other illustrations involving PLATO programs are also smart. For instance, the self-identification program, a marker shows a particular bone and the screen asks, "What bone is this?" If the student makes a mistake, typing in the wrong name, the following screen shows the bone the student mistakenly named and once more asks about the targeted bone. Inevitably any discussion of computers in education must deal with questions of instructional philosophy. Just as there are those in education who try to fit a round peg into a square hole by "defining" roundness, there are those in the computer education forefront who identify problems that are quite real, interpolates theories or explanations that are perfectly irrelevant, and come up with solutions that are best left in field, near cattle barns. Siegel and Davis approach the philosophical with patience and understanding. In Chapters 5 and 7. They begin with an easy-to-follow explanation of the many attempts to teach "powerful concepts" through a program language that permits the learner to manipulate a triangle.
Papert suggests that this debugging practice provides children with some concepts that can be generalized to show the larger issues. (This is another example of the sand and the bucket game.)

As Siegel and Davis put it: "The question is how to apply a concept like debugging to problems other than programming problems. "How does it apply to the task of fixing up written a composition? Even if the student recognizes that her English and Logo are languages and that the bug in a Logo program can be remedied, where does the student go from here?" Debugging problems in computer programming usually are logical problems, ... Problems in writing mathematics. They could be logical, but they could be grammatical, stylistic, or conceptual, Papert.

Siegel and Davis respond to this anecdotc- al approach to instruction by pointing out that there is a difference between what a student has heard and what was taught. "Put this way: Having found out about Jenny's discovery, can the students in the class identify the study of nouns and verbs from the curriculum?" The authors point out that even for a student like Papert, his logical, metamatic, his identification of the problem is very reasonable. Nouns and verbs are not usually taught well in the typical "language class." What else is new? But the problem of undue formalism in the curriculum does not imply the ture.

Papert states, "in many schools today, the phrase "computer-aided instruction" means making the computer teach the child. In my vision, the child programs the computer and can therefore be expected to grow into manipulative people. As it is now, the computer is there to teach the student. . . But programming languages are themselves restricted, artifical mechanisms that work only in a world that is not the student's. Papert

She partially debugged the illustrations and got this:

Papert and Davis demonstrate a grasp of "intelligent" individualization in their list of specific things the program must do.

1. In debugging instruction, we must devise some way to help the student who already knows the content in a lesson and, if he or she does, individualizing the lesson by getting the student to skip it.

2. For students who do not already know the facts and/or skills the lesson teaches, and who thus enter instruction, we must:
   a. Teach them only the skills they do not know. Delivery is not fully individualized if the lesson is "all or nothing"—if students who enter it must take all the instruction, even though they make only a subset of possible errors in performing on the content.
   b. Give them immediate corrective feedback. Delivery is fully individualized when students get immediate feedback, and it must be specific to the learning errors they have made.
   c. Provide some efficient means for extended practice on the skills they have learned in the lesson. This means that the program must include practice, but individualized dependent practice, which means that the specific skills with which a student is having difficulty.

Chapter 7 asks us through the specif- ic- ium the book deals with software, showing us how the program permits accurate placement of students, im- mediately diagnosing skill level, a good per- formance; variation in lesson content (depending on student performance) distributed practice; and assigning in- structional activities (what Student M does after she completes this program).

The discussions of these issues is clear and very sensible.

The final chapter in the book deals with specific issues associated with the instructional use of software. Chapter 6, educational software tools discusses some of the more subtle issues of software tools. Chapters 8 and 10 deal with very practical issues of using computers in the classroom and attacking the courseware problem. Chapter 11 presents possibilities, what could be. The closing paragraph suggests the ultimate possibilities of all these ideas.

"When the time comes that it is possible to carry the entire contents of the Library of Congress around in a bracelet-sized computer, the problem we will face is not one of knowing how to build the data base we carry, but how to get at the information (and in the case of medical diagnosis, increases our command of the knowledge and skills we need, this capacity to lead us into creative use of an awe-inspiring powerful word medium is sure to increase) as we would the best library and the best computer as teacher.

My final note: As you can tell from my frequent editorial comments (other- wise known as opinions), I found this book both informative and carefully se- quenced, I think it should be required reading for anyone in education who is looking at computers as a solution to global problems. Computers that deliver instruction on a student-by-student basis work out through various examples, are driven not by hardware, but by the raw intellectual power of the individual. If those details are designed according to sound instructional principles, the pro- gram would be a powerful learning tool. The book has wasted both your time and that of your students.

Reviewed by Siegried Engelmann
First Year Report on a Jr. High LD Class

By Charles Arthur—Teacher
Winchester, Massachusetts

Program Description and Test Score Interpretation

In September 1984 a special class was established at my Jr. High for students with learning difficulties. Tests were given at the beginning and end of the year in order to evaluate the progress that was made by the students during this first year. Only test scores for six students have been recorded because they are the students who completed a full year of the program. Three other students were in the class for a portion of the year. Testing was not completed for these three because of the partial year participation and because of attendence problems. Also, these three did not have the same serious academic problems as the first six.

For the six students, (4 boys and 2 girls) the average age at the beginning of the year was 12.5 years old. All students were considered 7th graders at the beginning of the year. Their ages ranged from 12.2 to 14.2. The daily classes included instruction in reading, language, math, independent reading in the context areas, and, for three of the students, a spelling/writing class. An Instructional aide worked in the class for the last three-fourths of the year when 8 or 9 students were in the program.

The main purpose of the class was to provide intensive instruction to students who were at least grade-levels behind in academic skills due to a history of learning difficulties. The goal of the program was to help the students catch up as much as possible to the average skills of their own grade level. In order to do this, each student would have to make more than a year's progress within the year.

The tests given, as one indication of this progress, were all norm-reference tests. These tests sample a progression of representative skills and provide standard average scores for various age levels and grade levels.

The tests would be expected to improve at least one grade level in order to keep pace with the average progress. To catch up, they need to progress more than one grade level. All six students progressed at least two grade levels in most areas. Thus, the progress made with these students, during this year, indicates that it is possible for students with a history of learning problems, who have fallen way behind each year, to begin to regain these losses.

Not all of the students were given exactly the same tests. Some first year difficulties prevented a complete uniform evaluation. For example, one of the 7th graders refused to take any oral tests at the beginning of the year, and the lack of time caused a few small omissions with other students. In spite of this, the testing was very similar for each student, and enough tests were given to provide adequate information (see Table 1).

The most interesting aspect of these scores has to do with the degree to which they correlate with the mastery of curriculum objectives. Curriculum objectives can measure skills more precisely, but are more difficult to relate to age or grade level groups. The Reading Comprehension/Written Language objectives and the Reading/Decoding objectives were taken from the Corrective Reading Program by Engelmann and others. This program has three levels of reading and decoding skills and are the other for reading comprehension and written language skills. These programs plus the correct spelling and math programs from the same author comprised most of the curriculum for this class.

To summarize, the curriculum levels achieved in the class, all six students mastered the Reading Comprehension/Written Language objectives of Comprehension B. Two students completed Level B Decoding skills, which represents a year's advance. Another completed this same level and about 15% of Level C Decoding Skills. Two students completed all of Level C Decoding Skills, and one completed 80% of this same level. Level C Decoding Skills also represents at least two grade levels.

In math the progress in curriculum skills was more mixed. Three students completed long division, word problems with the basic four operations and about 75% of fraction and decimal computation skills. One student accomplished the same skills with the addition of close to 90% of fraction, decimal and percentage skills; and two students acquired about 50% of all of the skills, but did not start as low as beginning division skills at the beginning of the year.

The results shown in Table 1 give strong support to the effectiveness of Direct Instruction programs.

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<tr>
<th>Table 1. Results for Six LD Children</th>
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<tbody>
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<td><strong>A. Test of Language Development (TOLD—Intermediate)</strong></td>
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<tr>
<td>(Mean = 100, standard deviation = 15, N = 6)</td>
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<tr>
<td><strong>Scale</strong></td>
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<tr>
<td>-----------</td>
</tr>
<tr>
<td>Overall</td>
</tr>
<tr>
<td>Listening</td>
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<td>Speaking</td>
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<td>Semantics</td>
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<td>Syntax</td>
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<p>| <strong>B. Test of Reading Comprehension (TORC)</strong> |
| (Mean = 100 and a standard deviation of 10) |
| (N = 6) |</p>
<table>
<thead>
<tr>
<th><strong>Scale</strong></th>
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<th><strong>June 1985</strong></th>
<th><strong>Gain</strong></th>
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<tr>
<td>Comprehension Quotient</td>
<td>83.5</td>
<td>98.8</td>
<td>15.3</td>
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<tr>
<td>Vocabulary*</td>
<td>7.5</td>
<td>8.0</td>
<td>0.5</td>
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<tr>
<td>Syntax*</td>
<td>7.3</td>
<td>9.6</td>
<td>2.3</td>
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<tr>
<td>Paragraph</td>
<td>7.8</td>
<td>9.7</td>
<td>1.9</td>
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<tr>
<td>Sequence</td>
<td>7.3</td>
<td>10.0</td>
<td>2.7</td>
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</table>

*Student D was given the Vocabulary Comprehension test orally in the Fall and through reading in June.

<p>| <strong>C. Test of Written Language (TOWL)</strong> |
| (Mean = 100, standard deviation = 15, N = 5) |</p>
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<tr>
<td>Overall</td>
<td>81.6</td>
<td>95.4</td>
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<p>| <strong>D. Sequential Test of Educational Progress (STEP)</strong> grade equivalent scores. |</p>
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<td>Reading (silent)</td>
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<td>Vocabulary</td>
<td>3.90</td>
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<td>Written Language</td>
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<td>Math Computation</td>
<td>3.63</td>
<td>6.17</td>
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**E. Woodcock—Johnson Psycho-Educational Battery grade equivalent scores** |
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<td>Reading Cluster</td>
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<tr>
<td>Written Language</td>
<td>4.87</td>
<td>6.52</td>
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*One student was not tested until late November.

<p>| <strong>F. Wide Range Achievement Test (WRAT)</strong> grade equivalent scores. |</p>
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<td>Word Recognition</td>
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<td>6.68</td>
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<td>Spelling</td>
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<td>Math computation</td>
<td>4.30</td>
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**Theory of Instruction**

By Siegfried Engelmann & Douglas Carnine

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Siegfried Engelmann

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The success of further problem solving research depends on less on a continued analysis of the user and his or her behavior and more on research regarding the limits of instruction the students are currently receiving, and (2) developing appropriate strategies that will work with low achieving students.

We investigated math word problems in a study to determine if these elementary school students who were selected from three major arithmetic intermediate level textbooks and from the California Mathematics Test. Sixty-eight percent of the problems on the test were like ones included in the instruction, and the remaining 32% were transfer problems.

Results

Results indicated no significant differences between performance of the Direct Instruction group and the Semantic, a group on the posttest. Also the amount of time used to take the posttest, interviews with students as a computer program and written tests were administered (i.e., choosing the correct operation and telling a reason for the chosen operation) did yield a statistically significant difference between the groups favoring the Direct Instruction group, but the mean performance levels for both were not educationally significant.

Discussion

There are many possible reasons why there were no significant differences between groups. Eleven days at 25 minutes a day may not have been long enough an intervention. With a longer treatment period, it would have been more certain that an unacceptable level of performance was attributable to other factors. Further, observations of student performance during the study indicated that many students typically ignored prompts on the screen and told them what to do next. Hence, a failure to attend the students were missing opportunities to learn from these errors.

Reasoning Skills Correction Procedures

Much of the recent literature on improving special education teaching practices has stressed the importance of providing academic feedback to students with disabilities. Therefore, it is important to consider feedback on the accuracy of the student's answers. The computer then told the student what specific errors were made in the process of solving the problem, and the student was instructed to correct them. For example, the student was told to correct his/her error before moving on to the next problem. This type of feedback helped students to more accurately identify and correct their errors. The computer then told the student what specific errors were made in the process of solving the problem, and the student was instructed to correct them. For example, the student was told to correct his/her error before moving on to the next problem. This type of feedback helped students to more accurately identify and correct their errors.
not help them solve the problem corre-
tectly. These authors suggest that stu-
dents need to learn all the steps nec-
essary for a problem's solution.

Results
A 2 x 3 analysis of variance (ANOVA) was done to compare the four groups (time of correction) and one within subjects factor (Time of Test) was performed on the data. The results were signif-
icant and comparison that looked at the post and maintenance tests only. The ANOVA indicated a significant dif-
ference in favor of the Elaborated Correc-
tions group (p < .001). There was also a significant difference between the two groups on the transfer test, again favoring the Elaborated Correction group (p < .05). Data were collected on the time students took to complete each of the five lessons. The purpose of this was to see whether students in the Elaborated Corrections group took more time to complete the lessons. ANOVA analysis of variance (ANOVA) with repeated measures was performed on the returning to quizzes items. No inter-

dependent significant difference between groups was found.

Discussion
This study was the first to explore ex-
perimentally the effectiveness of elaborated corrective feedback in teaching a complex cognitive skill to handicapped students. The results indicate this is an effective instructional procedure.

The roughly equivalent time for the two groups to complete the five lessons seems anomalous at first. With more time available for the Elaborated Corrections group, that treatment would seem to take longer to complete the lessons. In both groups feedback were not significantly larger for the elaborated corrections group. The feedback on learning materials during data collection was found to be beneficial. Treatment effect—time required to read the elaborated corrections may have been compensated for by faster ac-


tivity. It is possible that the students in elaborated correction groups improved their reasoning skills as measured by the dependent variables. These improvements appeared at the mean score of 60.7% on the posttest (a dramatic gain from the mean scores of 26%). The feedback by the experimenter is systematically described by order—particular-ly through a series of carefully controlled procedures—may have contributed to this gain. Reasoning skills were ac-
quired without any instruction from the teacher. Typically, CAI programs merely provide drill and practice exercises to supplement teacher instruction. Here the program was a true tutorial and did all the instructing.

Health Ways: Problem Solving Skills
Secondary students spend a consid-
erable amount of their time com-
crating application-oriented activities. These academic tasks often involve higher-order cognitive skills, and stu-
dents are asked to make a variety of in-


dent tests. The major advantage of this approach is that it allows for a more realistic evaluation of the students' problem-solving abilities. The results of such tests can be used to identify areas in which additional instruction may be needed.
How to Get Generalized Treatment Gains

Using DI to Teach Self-Monitoring Skills

By Robert L. Koegel
University of California at Santa Barbara
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Teachers, researchers and other educators are becoming increasingly concerned about the fact that teaching new behaviors does not commonly result in their generalized use outside of the teaching setting (Carr, 1981; Koegel, Damon & Stocker, 1982; 1st, 1971; Sommers, 1982). Oates and Barks (1979) report that some programs aimed at teaching self-monitoring procedures have been major developments in the Direct Instruction Model for teaching a wide variety of behaviors (e.g., Koegel, 1981; Koegel, Koegel, & Lieber, 1968). The purpose of this article is to discuss the generalization of the Direct Instruction Model for teaching self-monitoring skills to children with their own behavior in non-treatment settings. This article will focus on the challenge of teaching self-monitoring skills in non-treatment settings and the difficulties that arise in doing so.

A. Definitions:
1. Specify the characteristics of the target behavior(s) and general setting(s).
2. Observe the client's behavior and operationally define the inappropriate and appropriate (target) behaviors.
3. Determine a behavioral unit small enough for the client to attain immediate mastery.
5. Define a gradual stepwise increase in the target behavioral unit until the client achieves the ultimate behavioral objective.

B. Training the Self-Monitoring Behavior in One Setting:
1. Familiarize the target behaviors and identify both sets of appropriate and inappropriate behaviors.
2. Teach the client to record (on a counter or piece of paper) occurrence of the first behavioral unit.
3. Provide the largest possible set of reinforcers for accurate monitoring of appropriate behaviors(s) for monitoring inappropriate behaviors(s).
4. Provide 2 points for valid self-monitoring activities, and 0 points for invalid self-monitoring activity.
5. Set the criterion level in the clinic that is high enough so that the client will be able to readily and successfully perform the behavior in the natural environment during the subsequent treatment steps.

C. Self-Monitoring in Natural Settings:
1. If no appropriate behaviors occur in the natural environment, determine a method for prompting their occurrence.
2. Define a reinforcement schedule, whereby reinforcers can be provided immediately following the performance of the target behaviors.
3. Define a reinforcement contingency for the client's self-monitoring in the non-treatment setting.
4. The above steps are divided into three areas. The area of the first approach, preparation, is to define the instructional universe. In the case of many target behaviors, the instructional universe is so large that the ultimate goal is to want the behavior to occur in all settings.
5. The second area is self-monitoring as a mediating event in the Ways study. If this observation is correct, then computer-assisted instruction—carefully developed with aids and glases—may have a significant role in the development of skills in the classroom. These studies present a few general ideas on how computer-assisted instruction can be effective in teaching self-monitoring skills. An important step in this process is for the teacher to determine whether or not the computer can be used effectively in the classroom. This requires careful analysis of the task, the stage of instruction, and the appropriate role of the teacher.

Instructional Design

Continued from Page 12

comparison was to extend the posttest analysis to students of a comparable age group who were also receiving health instruction. Again, scores from each section of the Health Ways Nutrition and Disease Test were analyzed. Total score on the Diagnosis Test showed that students in the conventional group performed best on the target behaviors, followed by the computer group and lastly by the group of students who received no treatment. A significant difference also appeared between the groups on the reinforced subscale of the Nutrition and Disease Test (p < .02). Tukey post-hoc comparison showed a significant difference between the computer-assisted simulation group and the two other groups (p < .02), favoring the simulation students taught by Health Ways, but no difference on items not reinforced.

Discussion

The results of this study support the use of computer simulations in teaching material not easily taught by traditional means. Further, a structured approach to teaching behavior was specified and controlled, and does produce significantly educational results.

We infer from the results that the explicit strategy instruction used to teach the simulation students about Health Ways was a successful bridge to "less" direct instruction activities. Further, the superior performance by those in the simulation group over non-handicapped students from regular health classes shows that explicit strategies instruction is successful in teaching unstructured academic tasks that involve higher-level knowledge structures or strategies. The two non-handicapped students who had the highest scores in the simulation group articulated a prioritizing strategy comparable to that given by several of the handicapped students. Thus, many of the handicapped students in the simulation group showed a conscious awareness of the strategies that they were using, as did the two non-handicapped students, who may have achieved their awareness in a more intuitive manner.

Conclusion

The results of these four studies indicate that properly designed CAI can be effective as an instructional medium. These findings are consistent with our non-computer research that we have conducted over the last 15 years. Using sophisticated, empirically-based design principles can make a considerable difference in the effectiveness of any instructional program. Yet another outcome of this study is that they begin to identify—with much greater clarity—the role of the teacher and his/her instruction independently of the computer. This perspective deviates from original question about computer-assisted instruction (e.g., is CAI more effective or efficient than conventional instruction)? It forces us to look closely at the interaction of the teacher, the academic task, and the stage of instruction.

The Vocabulary Instruction study, for example, demonstrates that a skill requiring a moderate level of adequacy can be taught on a computer. Such a task is time consuming for a teacher and can be handled effectively by the computer. Furthermore, there is little variation in the output of one stage of instruction to another (i.e., from introduction and teacher modeling, to guided practice, and independent practice). Note, however, that the task, as it was defined in the study, was one of memorizing vocabulary words. We did not teach nor assume that students would necessarily learn how to use the words appropriately or detect their meaning from context. This would have required a different analysis.

The Reasoning Skills program, a teacher-independent tutorial, was successful in teaching a more complicated academic task—linear logical inference. It might be argued that the guided and independent practice phases of instruction are, in the least, as important as the computer-assisted instruction that was taught in this program were more direct, more explicit, and more word problems or the subtle problem solving skills addressed in the Health Ways study. This observation is correct, then computer-assisted instruction is effective in teaching self-monitoring skills to children who have not been previously exposed to such skills in other classroom settings. The results of this study reinforce the importance of using computer-assisted instruction in teaching self-monitoring skills to children with special needs.
Self-Monitoring

Figure 1. Self-Monitoring Record Sheet

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
</tr>
<tr>
<td>Total</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Weekly Total**

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
</tr>
<tr>
<td>Total</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Points for Specific Behaviors**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>Total</td>
<td>2.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Notes**

- The clinician noted the child's improvement in self-monitoring and recorded the points accordingly.
- The child was praised for his efforts and encouraged to continue.
- The clinician set a new goal for the child to increase his self-monitoring skills.

**Conclusions**

The child demonstrated increased self-monitoring skills, indicating improved behavior regulation. The clinician recommended continued practice and reinforcement of self-monitoring strategies in various settings.

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**References**

- Direct Instruction News, Winter 1988
School Discipline Plan
Continued from Page 5

1. Development of a Parent Training System
Many parents accept that there are very few children who can function adequately at school when their home situation is in disarray. An effective school discipline plan needs to provide some systematic assistance to parents in the area of managing behavior. Some parents will say that they were never trained to be parents, others will say that school progress reports tell them what to do while others will assert that what happens at school is school business and what happens at home is no business of the school. In any event, we recommend that a systematic plan be developed to assist parents in managing behavior. The plan could consist of:

a. Communication of simple rules or techniques to help prevent behavior problems. The techniques could be listed in a booklet form or presented to parents in a workshop. The workshop approach, while ideal, does not usually bring in many parents unless considerable groundwork is undertaken (unfortunately the parents who generally come to these workshops are the ones who least need the information). The workshop could cover strategies to show parents how to:

Self-Monitoring
Continued from Page 14

habit appropriate behavior for longer time periods to earn points (steps 5, 8, and 12). Eventually he worked up to a whole day, and by the end of the school year he was required to demonstrate appropriate behavior before he could earn his reward. Finally, his parents were trained to utilize the same natural consequences procedures to improve his behavior at home. At present it appears that this child is handling school situations which would not have been possible before. The school consequences the client is currently encountering.

(For References, write Wes Becker, ADJ News.)

be displayed affection, approval, interest and love.
• Present themselves as good role models.
• Establish limits.
• Build self-esteem.
• Use positive and negative consequences.
• Ensure family “space.”

b. Allow opportunities for success and failure under controlled conditions.

Success and failure are both important so that the student can learn to live in two worlds. Keep the rules at school and family to different rules or values.

a. Clear, if the situation is bad enough, we should refer the case to appropriate agencies and try to encourage the parents to seek help.

b. Establish lines. Another difficult situation is the troubled child whose parents are separated or divorced. In many of these situations, the children are divided on how the child’s problems should be handled. In some cases, the emotional well-being of the child is at stake. In other cases, the child is usually one of the causes of the conflict between the two parents. It is imperative to know the child’s legal custody and to work with that parent. The other parent could be informed of what is being done, but would not necessarily have input or control (given their denial of the conflict between the parents on the procedures for management of the child’s behavior). The matter is more complex where joint custody is involved. In this situation it is best to work with the parent who has custody at the time the interaction occurred. The other parent would be informed, but would not necessarily be involved in the decisions.

c. Tacit approval. In this situation the parent is basically displaying approval of his child’s behavior through comments such as: “I was like that as a child,” “We have the same problems,” that is, “I have a person to stand up for his rights,” etc. In these cases, it is best to keep close to the parent and the behavior is generally acceptable in the school. The issue is one of values and the best we can do is to say something to the parent about the behavior by the school regulations. The stance is to present information that is not really meaningful to the parent.

d. Cooperative parents. A major problem in the school situation is that we spend a greater part of our time counseling troubled students. Consequently, it is very important that we make efforts to make adequate contact with students who keep the rules and behave appropriately. Similarly, we can spend our parent contacts with “troubled parents.” In like manner, it is important to make contact with cooperative parents and to acknowledge their behavior.

b. Communication of simple rules or techniques to help prevent behavior problems. The techniques could be listed in a booklet form or presented to parents in a workshop. The workshop approach, while ideal, does not usually bring in many parents unless considerable groundwork is undertaken (unfortunately the parents who generally come to these workshops are the ones who least need the information). The workshop could cover strategies to show parents how to:

6. Managing the Parent Conference
Some situations may just require a verbal statement or a set of guidelines. Other situations may require a formal parent conference comprised of the concerned principal, the child, and the parents. There are a number of strategies that may prove useful in managing such a conference.

a. Be sure to have adequate documentation on hand before the meeting begins.

b. Make certain that all involved people are at the meeting. Problems will arise if second-hand information has to be used.

c. Maintain a focus on the child’s behavior, what the child did and what action should be taken. Redirect discussion to this focus when other issues come up. If the child has been hurt or if the child has caused injury to others, this is the time to discuss the issue.

d. Be sure to give the child a chance to explain their behavior.

e. Let the child speak. The child will be more likely to be able to discuss their feelings if they are allowed to tell the story in their own words. The child needs to be able to express their feelings and to have the chance to explain their behavior.

f. The child needs to be able to express their feelings and to have the chance to explain their behavior.

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DIRECTIONS TO NEWS, WINTER, 1986

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In the late Spring of 1980, the Oldham County Kentucky Chapter I Staff, both certified and classified, were introduced to the concept of DISTAR, a methodology previously produced commercially as DISTAR. The total staff were impressed with the concept and requested additional inservice in the area of reading. The National Diffusion Network afforded inservice through the Dayton pilot project. Our local Board of Education entered into a participation agreement with the Dayton Direct Instruction Project and the National Diffusion project. As a result, representatives from the Cleveland Public Schools were invited to the Oldham County Board of Education for purposes of providing inservice and instruction.

The program was offered for one year in the Chapter I remedial program. At the end of the year, the regular elementary teachers became very interested in the program because they began to see increased reading behavior in the students. They requested the same opportunities to use the program in their regular classroom programs. As a result of the principal, we developed a program for those students in the regular classroom programs. The Oldham County Board of Education was approached and the program approved for the following school year; it then trained in the DISTAR procedures.

The DISTAR program has been used for the lowest achieving students at Crestwood since 1982. Each year the staff at Crestwood, along with the Principal, Mr. Jacovino, petitioned the board for continuation of the program.

The success and the results of the Crestwood project prompted the teachers to ask if the program, take inservice, and also request a project approval for their first grade. This project was completed for the 1983-84 school year. They are now requesting the project for both first and second grades for the 1984-85 school year.

Direct Instruction, as presented in the DISTAR program incorporates most of the techniques that have been identified as EFFECTIVE: Scripts, Group Instruction, Signals, Reinforcement, Training. Group Training, and the following principles expand on each of the effective teaching activities.

The major goals of the lesson-script may be initially thought to restrict teachers’ initiative. However, the advantages of scripts in providing a task control in a delivery system outweigh any criticism. Scripts permit efficient learning if followed because the selection of sequence and examples are controlled. Most teachers simply do not have time to find appropriate tasks for a variety of groups or to sequence skills in an efficient manner. When teachers phrase their own questions, they often choose questions that are known to lower-performing children or they may select unnecessary content. Often, major skills are omitted.

Another advantage of scripts is their potential role in providing effective classroom instruction. Teachers can learn effective presentation strategies faster than they could alone. Scripts often begin using Direct-Instruction techniques in which no specific scripts are available. A positive addition is that.

Is apparent during training and supervision. The precise skills needed to teach a particular skill or lesson can be specified when using Direct Instruction. Supervisory staff can quickly determine what is happening and correlate that information with what should be occurring. In this setting, the supervisor is better equipped to provide direct, practical demonstrations or suggestions to the teacher or aide. Standardization of the teaching program also makes it easier to monitor the progress of children with criterion-referenced tests, since the on-going testing procedures indicate student's level of readiness.

The use of rapid-paced, teacher-directed, small-group instruction has proven quite effective in dealing with young children. The data on affective outcomes, however, do not necessarily indicate the benefits. The use of small groups has many advantages. It is more efficient than one-to-one instruction and provides better teacher-direction, supervision, and individualization than large group instruction. Students also benefit from having the opportunity to practice communication skills, which children from non-English and economically disadvantaged families are less likely to develop. Small-group instruction provides a setting in which the repetitive practice can be used to develop or reinforce important skills, which are made more fun by transforming drill into a challenging game. Children enjoy the rapid pacing when circumstances allow them to be successful.

The first direct teacher on how and when to use signals to cue a group to respond together. For example, when reading a word, a finger is used to point to the letter being sounded out. The children say the sound as long as the teacher reads the signal. The teacher then stops when designated signal is made. Teachers train require to learn how to use signals in a natural and clear manner.

The research did not indicate effective response. They have suggested that it could foster an authoritarian role for the teacher. This could be remedied by training signals to direct such groups as choirs or orchestras also promote subconscientization of the child as an adequate teacher. Pedagogical research continues to support the conclusion that students should be given clear, explicit, and relevant instructions. The use of signals obviates this problem.

The use of signals, finally, in cost as a fostering role. This factor, however, does not have a significant impact on instructional outcomes. It does, however, affect the long-term benefits of carefully sequenced teaching. The following conclusions do not support the criticism of rote learning.

The research indicates that children should learn for intrinsic rewards. This does not happen, however, teachers must provide clear, direct signals that

The Oldham County Kentucky Spring, 1985 DISTAR test results produced some significant scores. The Direct Instruction program has been in operation at school #2 since 1982. The students who began the program are now going into the Fourth Grade. The dramatic re-duction of Crestwood students, through the first and second half of the 1984-85 school year, shows that the 40th percentile in both reading and math are provided in Tables A and B. Since math scores are provided in Tables A and B. Since math scores are generally 20 to 30 points below these children, the possibility that the successful teaching techniques learned in reading are being modeled and carried into the regular math program.

The results of the one year program at School & School & have not been measured. This program requires refinement in presentation and effective teaching techniques. In addition the students have not had an opportunity to catch up after being introduced to this base of knowledge during the one year that the teachers have used the directed scripts.

In a recent article published by the United States Office of Education, the conclusions of the Commission on Reading were given. Effective teaching was characterized by a simple introduction to phonics during the first and second grades. Providing students with an opportunity to read aloud was another strategy advocated by the commission. As the opportunity to read silently. Teacher's handling of errors and their correction were considered important. The passing of a word was emphasized in reading. The commission criticized excessive workbook activities and excessive homework assignments, which are considered as reading activities. Writing supports and strengthen reading abilities.

Our DISTAR program incorporates the techniques of economy and activity as evaluated as effective. The percentage of students who fall below the 40th percentile at our Crestwood site is extremely low compared to other elementary camps. Crestwood's population, as a single factor, does not account for this reduced percentage of students below the 40th percentile. Crestwood in its student and residential make-up has been most often identified with School 4, while School 3 has consistently offered higher achievement test scores. Although we cannot factor out all variety, we can see that the results to our DISTAR program and the effective teaching techniques are supported by the program.

| Table A. 1985 DISTAR Percentages of Students Scoring Below 40th Percentile Reading |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| School | School | School | School | School |
| 1st Grade | 2nd Grade | 3rd Grade | 4th Grade | 5th Grade |
| Crestwood Elementary | 16.44 | 21.31 | 25.03 | 30.89 | 35.67 |

| Table B. 1985 DISTAR Percentages of Students Scoring Below 40th Percentile Math |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| School | School | School | School | School |
| 1st Grade | 2nd Grade | 3rd Grade | 4th Grade | 5th Grade |
| Crestwood Elementary | 16.30 | 18.42 | 20.54 | 22.66 | 24.78 |