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Using DI to Teach Computer Programming to Retarded Institutionalized Adolescents

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The application of Direct Instruction technology to the development of basic intellectual behaviours and cognitive processes with developmentally disabled children has been increasingly well documented in the literature over the past decade. These field studies (Booth et al, 1979; Bracey et al, 1975(a); 1975(b); Clunies-Ross, 1979; Gersten & Maggs, in press; Maggs, 1974; Maggs et al, 1980; Maggs & Morath, 1976(a); 1976(b)) have demonstrated that, given direct verbal instruction according to the Theory of Direct Instruction (Becker et al, 1975; Engelmann & Carnine, 1982) in the academic tasks of the language of instruction, basic reading skills and/or basic mathematical skills, such learners are able to exhibit the acquisition of an increasingly refined set of cognitive processes with which to control their own learning as well as a repertoire of intellectual behaviours in order to deal with their environment.

The Development of Basic Intellectual Behaviours and Cognitive Processes through Direct Instruction in Basic Numeracy and Literacy

The 'intellectual behaviours' or 'intellectual skills' required for dealing with one's environment consist of discriminations, concepts (the acquisition of which is demonstrated through operations) and rules. As the acquisition of this behaviour, which centres around the learning of concepts, is the most fundamental capability learned by human beings (Gagne, 1977), the initial research (Maggs, 1974) involving developmentally disabled children investigated the applicability of the Direct Instruction model to the teaching of concepts.

The subjects of this two-year 'true' experimental pretest-posttest study were twenty-eight moderately to severely intellectually handicapped children (age range 6-14 years) in two long-term institutions in N.S.W.

The children in the experimental groups were instructed in the language of instruction using the DISTAR Language 1 programme (Engelmann et al, 1969) and taught through the systematic application of behavioural principles, whilst the control groups received language instruction using

traditional teaching practices and the Peabody Language Programme. Results indicated that the learners in the experimental groups were able to exhibit the acquisition of a significantly higher number of concepts than those children in the control groups after the two-year instructional period (Maggs, 1974; Maggs and Morath, 1976(b)).

A further area investigated by this study was whether these children would be able to exhibit the acquisition of an increasingly refined set of cognitive processes. These processes, which are variously referred to in the literature as 'self-management behaviours', 'cognitive strategies', 'executive control processes' or 'cognitive processes' are largely independent of specific external content, such as language and numbers, but can only be learned, applied and progressively refined through the acquisition of intellectual behaviours (discriminations, concepts and rules). Once acquired, they are exhibited as the generalization of the intellectual behaviours learned to a variety of novel, but related situations. (Gagne, 1977; Olton et al, 1967; Wittock 1967). Hence, in order to examine whether, in the course of instruction, cognitive processes rather than only intellectual behaviours had been acquired, the subjects were tested on more general tests of cognitive functioning.

Results showed that the subjects instructed using the DISTAR materials

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Inquiry vs. DI Methods for Teaching Legal Concepts to High School Students

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Ed. Note. This report has been adapted by Wes Becker from Fielding's Ph.D. dissertation, submitted to the University of Oregon in 1980. A published version of this report will appear in Journal of Educational Research in the near future. In the published report, Edward Kameenui, University of Montana, and Russell Gersten, University of Oregon, are co-authors.

Research on teaching has increasingly focussed on models of teaching rather than isolated teacher behaviors (Gage, 1978). This study examines the effectiveness of two very contrasting teaching models (Direct Instruction and Inquiry) in teaching legal principles about student rights to high school students.

In Direct Instruction, students are shown explicitly how to apply concepts, are given extensive practice in applications of skills, and frequent feedback until mastery is reached. The lessons are designed to insure a high degree of learner success on the way to mastery (Becker, Engelmann, Carnine, & Rhine, 1980).

Inquiry teaching focuses on creating conditions assumed to promote "discovery", that is independent learning of important knowledge. The inquiry teacher asks challenging questions, poses problems, and probes students to be sure their responses are

thought out and based on valid evidence. The Inquiry teacher does not provide the answers or tell the students they are right or wrong. The attempt is to simulate real life problem solving where students are on their own (Bruner, 1960).

There have been some field studies (Stallings, 1975; Stebbins et al., 1977) and experimental studies (e.g., Darch, Carnine & Gersten, 1983) that have suggested that DI is more effective in promoting gains on tests of reading and arithmetic than inquiry related methods. However, these have not been tests of a well-developed Inquiry method under controlled conditions. It has been suggested that when the focus of instruction is on complex skills rather than basic skills, that Inquiry methods are likely to be more effective (Grouws, 1980). In Inquiry methods, the student is given more opportunity to test possible solutions and to analyze their mistakes.

A study by Oliver and Shaver (1966) is closely related to the present study. They compared "recitation" and Socratic methods for teaching legal and ethical concepts to junior high school students. They did not find any significant differences. However, the recitation method did not have the systemic guidance of learning provided by Direct Instruction.

The present study seeks to compare DI and Inquiry methods by teaching concepts and concept applications in the field of law. The field of law was selected because the Socratic method is widely practiced in American law schools, and it represents a well-developed Inquiry model (Mayer, 1966, p.81). In addition, legal subject areas are being incorporated more and more into secondary education, and their teaching merits systematic evaluation.

Method

Thirty juniors in a suburban high school participated in this study. They were selected randomly from two social studies classes and randomly assigned to the two experimental conditions. There were 18 boys and 12 girls. Ten single sex groups of three each were formed for instruction.

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A "Modest Proposal" for Educational Excellence

By Galen Alessi

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The major obstacle to improving quality of instruction in our school probably is deciding where to begin. Should we start with the publishers who market untested and non-validated curricula? Or with the university teacher training programs that studiously avoid telling student teachers how children learn, or how to teach them? Or should we organize local communities to pressure their schools to adopt effective and drop ineffective practices? Should we directly approach school boards and superintendents and explore why the education of children has taken a back seat to almost every other faddish issue and genuine crisis facing today's schools? Should there be a consumer movement and consumer reports for educational curricula and teaching products? It's not easy to figure out just when the schools became distracted from the basic mission of teaching children, nor just how to get the system back on that track, let alone going in the right direction. We have to start at a strategic point: one that will generate the greatest amount of positive, productive change with the least amount of public effort.

One strategic point would be the creation in each local school district of a Quality Assurance Commission. This commission would be independent of the board of education and act essentially as an outside, independent auditor of educational quality. Just as schools have outside, independent auditors for all financial transactions, there could be

similar auditing arrangements for quality of instruction provided. Similar models in government would include the Government Accounting Office which investigates and reports on various issues relating to management of government programs.

The commission would be established by local election, and receive a budget independent from that of the schools. Perhaps one-half a mill could be set aside to fund the quality assurance activities of the commission. Communities voting *not* to have Quality Assurance Commissions would at least have the chance of going on record against such a thing, and residents would have less cause to complain about quality of education issues in their schools. Communities that vote for such commissions would be placing on voter record their commitment to quality education in their schools.

The commission would have no authority to make any decisions about how the schools are run: that would remain solidly in the hands of the local board. The local board, likewise, would have no authority to make decisions about how the commission carried out its mandate. The quality commission would have legal access to school records as well as be able to observe school practices and even test and/or interview pupils, parents and staff. The commission members themselves would not become directly involved in the auditing process, but use the independent funds to contract with various experts for whatever evaluations are necessary. One study might investigate academic achievement, using standardized tests given by the school and teacher built. Other studies might investigate staff morale, or students' at-

titudes toward school, or the efficiency of various management practices by principals. The commission could analyze the effectiveness of the curricula adopted by the schools, using publisher, research and local performance data. The value and effectiveness of inservice training programs could be evaluated, or the effectiveness of classroom supervision and consultation provided to classroom teachers. Studies could be commissioned on the quality of preparation of teachers recently hired, with the results being sent to the universities responsible for the training.

Every six months or so, the commission could publish its findings in a Sunday supplement to the community newspaper. The school board, superintendent and local citizens could use the information to take whatever action might be necessary to improve the quality of education. Collecting and publishing these reports would define the legal responsibilities and limits of the commission: it would not be allowed to suggest specific actions for changing school practices.

Of course, procedures would have to be devised to keep the commission objective and truly independent. It would not help to have the commission boarded by retired teachers and school administrators, nor leaders of the local chamber of commerce. University



GALEN ALESSI

educators also may have too many other agendas preventing their objective participation. Once established, every political special interest group in the community will apply pressure to get a seat on the commission. The ability of the community to block such political pressure may determine the eventual contribution of the commission to improving quality of education. Members would have to be prepared to face tough issues without bowing to pressure from special interests. The commission would be expected to assume a critical, protagonist role. It would have to be as objective and committed to its task as a consumer's union.

What will happen if public schools fail to recover the quality in instruction? Public schools may face the same difficulties now ravaging the auto and steel industries in this country. By failing to improve quality, reliability, and efficiency, these industries now cannot compete with more efficient foreign competitors. Union workers with ten years of seniority are laid off with little hope of returning to their jobs. Unions are accepting significant cutbacks in fringe benefits and even wages (steel). And the industries face the dilemma of not being able to compete well enough to turn enough profit to modernize equipment and thus become more competitive.

Increasing numbers of parents across

the country are enrolling their children in private schools, even though they are paying public school taxes. As a large percentage of parents in a community take this option, there will be less support for the public schools: less support for passing millages, less support by active PTA members, and less support in terms of a higher percentage of bright young children in the public school population. As an overwhelmingly large percentage of parents place their children in private schools, public school millages may be cut back to bare subsistence (i.e., baby-sitting) levels. Similar situations have already occurred in several southern school districts and Boston, but for different (i.e., racial segregation) reasons. In those districts there is little interest in public schools among the majority of community residents. And community residents pass the millage.

Public schools have little time to waste in bringing back the quality education that will attract and keep parents who are genuinely concerned about their children's education. Establishing Quality Assurance Commissions may be a small price to pay now to avoid irreversible erosion of support for public schools later.

Why the need for Quality Assurance Commissions? Public school systems are functional monopolies. That is, consumers are forced to pay for the service, whether or not they use them, and thus can afford few options to public education in the private sector. Without consumer freedom, there is little "market control" on the quality or type of educational program provided, (compare with the telephone company). The recent movement toward voucher systems and tax deductions for private school tuition, as well as teacher accountability, are efforts by consumers to gain some corrective power over a system that does not give them the option to vote with their dollars for the kinds of services desired. Quality Assurance Commissions may allow public school systems to provide the benefits possible with large scale efficiencies of monopolies, while still retaining responsiveness to consumer concerns and needs.

Could private citizens and parents have a Quality Assurance Commission without a referendum and millage support? Yes, individuals could join together to begin such an operation. While their commission would not have a legal mandate to have access to school records, it could benefit almost all community residents (certainly all property and business owners) whether or not they have children enrolled in the school system.

Editor's note. As Milbrey McLaughlin points out in Evaluation and Reform (Ballinger, 1975), at the initiation of Title I, Robert Kennedy was skeptical of the ability of schools to use the added money effectively. He felt the act should include an evaluation requirement, in the hope that if the community were aware of the outcomes, they would pressure the schools to do better. Again, as McLaughlin so beautifully documents, the politicians were still naive. The administrators got around the requirement for at least 10 years (and more likely 18).

While the chances of adoption of Alessi's "Proposal" is about the same as that of Jonathan Swift's original "Modest Proposal," it expresses a real problem in education today—how to get excellence in instruction for all students.

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DI for Severely Handicapped Learners

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If you teach students with severely handicapping conditions, you probably have taught individuals who were either recently released from an institution or who were in danger of being sent to an institution. You probably wondered what to do with these problematic students. They often exhibit severe behavior problems and limited skill repertoires. They are also likely to have a variety of handicaps. For example, Ron, a ten-year-old, was admitted to a large state hospital in California. Along with a very limited skill repertoire, Ron exhibited severe behavior problems including regurgitating food, smearing feces, and placing dangerous sharp objects in his eyes, ears, and nose. Another student, Jess, not only exhibited severe behavior problems, but also had multiply handicapping conditions including partial vision, cerebral palsy, and a seizure disorder. Estelle, an eleven-year-old girl, required a wheelchair to move around because of her cerebral palsy. She had a very limited range of skills and several maladaptive behaviors, including biting and scratching her mother and teachers, and refusing to eat any solid foods. Also, she rarely initiated any activity. Teaching children with such limited skills presents many instructional and programmatic problems.

While there has been great progress in the behavioral treatment of the severely handicapped in the past 15 years, there is still a need for new technology to reach those who do not respond to current approaches. Because of our failures, extremely low performing students are still placed in large state hospitals where they are subjected to neglect, isolation, and impersonal custodial care.

The principles of direct instruction offer an innovative approach for teaching extremely low performing students that promises to add to behavioral technology. Direct instruction is based upon a logical analysis of learning (Engelmann & Carnine, 1982). While it was initially developed for mildly delayed learners, we believe that applying the component principles and procedures of direct instruction to severely handicapped students, we can help teach new skills to these students and prevent their social failure.

The purpose of this paper is to describe some of the problems we have encountered in teaching extremely low performing students and to relate how we have used the principles of direct instruction to solve them.

Project S.A.I.L.: Normalization through Direct Instruction

For the past two years we have been working with children and young people similar to the three students described below. They are residents of a demonstration group home in Mount Shasta, California. The home is the

main product of Project S.A.I.L. (Systems Adaptation for Integrated Living), a federally funded demonstration project conducted by the Oregon Research Institute. The project serves young people, ages 8 to 21, who were residents of a California State Hospital or who were awaiting admission to a state hospital. All of the clients have severely handicapping conditions, including mental retardation.

Take Henry as an example. He was born with Downs Syndrome. Henry lived in northern California, until he was six years old. No school services were available for him in his home town. When he contracted juvenile arthritis, there was no community service to help with his many needs. His mother placed him in a state hospital where he was the only verbal and ambulatory person on a large ward. He soon lost his speech and became socially withdrawn. Thirteen years later, when Henry moved to Mount Shasta to live in the S.A.I.L. training home, he exhibited few adaptive behaviors. He simply sat all day in a chair. He occasionally moaned. He had few self-care skills. When faced with this young man's needs, the question arises, "Where do we begin?" At Project S.A.I.L. the beginning is a statement of human values (Singer, in preparation).

The ideas of normalization and personalization suggest the ultimate goals of instruction. They focus the direction of our instruction on the demands of a normal household and community. They provide a set of values. We must keep these values constantly in mind when deciding what and how to teach our students. They tell us if our vehicle (instruction) is on course, but they do not tell us how to design and construct the vehicle. They do not tell us where to begin to teach. We must examine what a person must know in order to enter a simple human community. What are the basic elements of human communication and interaction? What must a person know to benefit from instruction? We have identified the following concepts as essential to the learning process.

The first principle that must be demonstrated to these young people is the contingent relationships inherent in social communities. The students we work with often do not conform to basic standards of human interaction. Their behavior appears random and unpredictable. Tantrums seem to develop without external provocation. These inappropriate behaviors imply a failure to comprehend the relationship between their action and social or environmental consequences. These students need an understanding of the rules and standards for acceptable and unacceptable behaviors. They must learn that acceptable behavior leads to reward and unacceptable behavior leads to punishment.

Another major principle is the meaningful nature of language. Many of our students possess little receptive or expressive language. They do not know the rudiments of communication. A basic concept which must be taught is that people can direct each other's attention in a civilized and purposive manner. If we point to a bar of soap, we are attempting to direct the student to use the soap. When we give an instruction, we are indicating to the learner what is expected.

These two principles, that the social community is orderly and that language is meaningful, directly relate to the issue of compliance. Compliance with instructional requests is a requisite of any instruction. We must carefully and deliberately teach our students to comply with instructions if they are to benefit from training. The following section will present examples of instructional procedures we have utilized to teach our students new skills, thus increasing their participation in society.

Compliance Training

Simple contingency management procedures are a powerful tool in changing behavior. However, these procedures are often not effective with persons who have firmly established inappropriate behavior of a serious nature (self-abuse, aggression, tantrumming, etc.).

When contingency management procedures did not produce adequate behavioral changes at Project S.A.I.L., a second procedure, generalized compliance training (Engelmann & Colvin in press) was implemented. This program attempts to teach compliance behaviors that generalize to a variety of settings while developing new skills. In addition, it attempts to eliminate noncompliance and other undesirable behaviors. The following example is for purposes of description. It does not provide a set of guidelines or a prescription for programming. The reader is referred to the book *Generalized Compliance Training* for a detailed description of these procedures.

One of the first skills taught in compliance training is to follow simple instructions reliably. Once students learn to follow simple instructions, it is possible to teach longer, more complex tasks. During later sessions, instructions incompatible with inappropriate behavior are also practiced. If inappropriate behaviors appear during the compliance training session, the student is corrected with a loud command, e.g. "No tantrumming!" and required to follow a simple instruction, e.g. (stand up and sit down). If the inappropriate behavior persists, the student is required to perform the simple instruction until the behavior stops. Social reinforcement is provided only after correct performance of simple instruction. Furthermore, the procedures are carefully programmed to achieve generalized compliance across all relevant people, materials, and settings. An important lesson learned in compliance training is that appropriate behavior or following directions leads to reward. Inappropriate behavior, disobeying directions, leads to simple repetitive tasks without reinforcement.

Generalized Skill Training

Generalized skill training refers to a method of teaching that incorporates many direct instruction principles (Engelmann, Colvin, & Singer, in preparation). Of interest in the present paper are the notions of *teaching core skills* that generalize to a variety of functional tasks, and *removed-component instruction* to focus training on essential features of tasks. These innovations have been used to teach self-care and domestic-living skills to students in Project S.A.I.L.

Core skills. A detailed analysis of the skills required to perform self-care and domestic-living tasks indicates that 10

basic core skills account for over 99% of all the motor movements (Close, Halpern, Slentz, & Taylor, 1982). Of these motor movements, the vast majority are variations of a simple manual grasp. Other core skills include push, pull, turn, insert, place, lift, stand, set, and rub. At Project S.A.I.L. we teach these basic core skills within the context of functional self-care and domestic skills. For example, teaching handwashing allows us to present the core skills of grasp and turn the faucet, grasp and rub the soap, rub hands and soap together, place hands under the faucet, etc. These core skills appear in a variety of hygiene tasks such as showering, bathing and shampooing. Once the core skills are mastered, they are easily applied to other tasks. Tasks are selected for instruction because they include core skills common to other functional skills, not because they are easy to learn.

Removed-Component Training.

Several students at Project S.A.I.L. could not perform basic core skills. Other students could perform the component response or core skill but not when it was needed. Both of these groups of students could benefit from removed-component training. The essential part of the task is practiced in isolation and then reintegrated into the task. Several rules guide this technique: (1) select skills or components that can be performed in less than 10 seconds; (2) present the massed trials instruction rapidly using functional reinforcement; (3) once the learner reaches criterion on the removed component, present it in a sequence juxtaposed to a variety of other skills; (4) finally, reintegrate the component back into the task and teach the task as an entire sequence. For example, one of our students was having difficulty washing his hands with soap. We removed the core skill of rub. He practiced several forms of rub (e.g. rub his arm, rub his hands together, rub his face, rub the table with a cloth, etc.). He then was required to perform different tasks requiring rub with the simple cue of, "Jack rub," paired with a gesture of where to rub. Finally, instruction of the entire hand and facewashing task was resumed.

Results

On a norm referenced measure of adaptive and maladaptive behavior, the clients of the training home have made statistically significant gains in adaptive behavior (domestic, leisure, self-help, and community skills) and shown significant reductions in maladaptive behaviors (tantrums, running away, public masturbation, destruction of property, aggression, and self-abuse). To date, three of our students have been able to return to their natural homes or to foster homes in the vicinity of their home communities. Three other clients are scheduled to leave for foster homes as this article is in press. The home has a waiting list of referrals for other children with severely handicapping conditions and a replication home will be opened soon in Chico, California. Global data for the efficacy of our demonstration model is described in detail elsewhere (Singer & Close, in preparation).

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A Study of Teacher Presentation

by Craig Darch, Alburn University
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Identification of instructional presentation variables that lead to increased student performance is an important aim of educational research. Presentation variables are especially important in programs for mildly handicapped students. Two procedures essential to success for these students are rate of presentation and use of praise. Both promote attention to task and accurate work. Success in these areas is important in the development of academic achievement and self concept.

Rapid pacing has been shown to improve the academic performance of non-handicapped students (Carnine, 1976). Many studies show that teacher praise is important in all aspects of an educational program (e.g., Walker, 1979).

The present study was designed to extend the research on rapid pacing and feedback to learning disabled students. Also, both the isolated and interactive effects of rapid pacing and praise were evaluated.

Method

Subjects and Setting

The subjects for this study were four students, three boys and one girl, who were identified as learning disabled by school psychologists. Each had a history of difficulty in basic word decoding. At the beginning of this study, each subject had just been placed into the learning disabilities classroom. Students' individualized educational programs (IEP's) included learning basic sound/symbol relationships and blending sounds into words.

The reading class met daily for a 45 minute period. The first 20 minutes were used for the experimental intervention. The remainder of the class period was spent having the students work on individually designed worksheets. The four students were taught as a group. The teacher for this study was a 23-year old woman who was completing a graduate practicum in learning disabilities.

Reading Program

The DISTAR Reading I Program was used for this study. In this program, the rate of teacher presentation (pacing) is expected to be rapid (approximately ten tasks per minute).

Before the study began, the teacher and experimenter practiced providing signals for student responding, contingent praise, and increasing the rate of

instruction. Training consisted of demonstration, practice, and feedback. These sessions occurred after school and lasted approximately 30 minutes for five consecutive days.

Experimental Design

A modified reversal design, with replication across subjects, was used. The advantage of this particular design is that it allows demonstration of both the isolated and interactive effects of individual intervention components. Because most instructional systems are multi-component, the ability to identify those aspects of a treatment that contribute most to increased student performance is very important. Data were collected daily during this study and the experimentation lasted a total of 25 school days.

DI for Severely Handicapped — Continued from Page 3

The following descriptions are presented to provide a better understanding of the young people we are teaching and the techniques being used in the home.

Freddie. Freddie is now 17 years old. He is a tall, thin, and handsome young man. However, when he entered the program he possessed very little language, constantly engaged in some form of self-stimulatory behavior, and tantrumed violently an average of five times a day. He had lived most of his life in institutions because of his frequent tantrums.

For several months his tantrums were treated with a contingency management system. He was rewarded with praise and activities when he behaved appropriately. He was placed in a time-out corner when he tantrumed. The number of tantrums decreased, but their intensity worsened, and he began to smash windows. A staff member's wrist was broken during a tantrum. The generalized compliance training procedure was implemented at this point.

The procedure dramatically reduced the frequency and intensity of Freddie's tantrums. This decrease has maintained for eight months. When tantrums did occur, they appeared to be triggered by an unplanned and improper change in instructions or in general group home management procedures. In other words, the causes of the tantrums were clearly identifiable and easily remediated. The graph in Figure 1 illustrates the change in Freddie's behavior.

Jack. Jack is 16 years old. He was born with only one eye, has cerebral palsy in half of his body and is physiologically incapable of speech because of distortion of his face. He has been in and out of the state hospital system since birth. Each foster placement has failed because of Jack's inappropriate behaviors that include loud sustained yelling, self-biting, throwing objects, spitting food, and falling on the floor to resist manual guidance.

Jack's skill training was a problem. He often performed most of the steps of a chain, but then showed decreases in correct responding before reaching criteria. Changes in reinforcers and changes in instructional content did not remediate

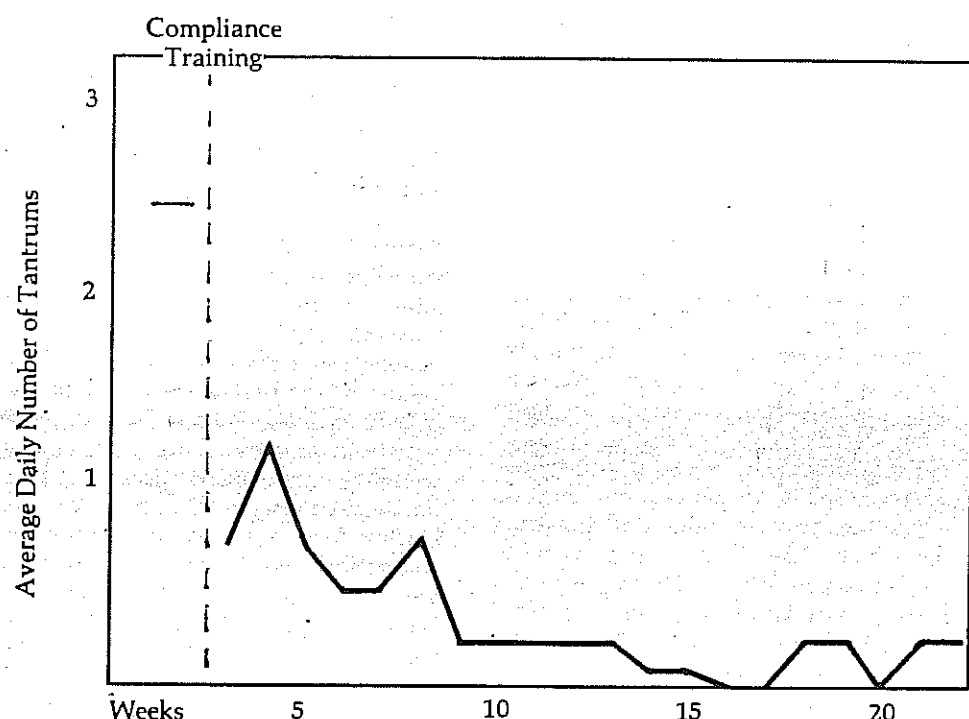


Figure 1. Average daily number of tantrums per week before and after generalized compliance training.

this problem. The strategy that has proved to be promising with Jack and with other clients involves teaching a removed component of the task.

Figure 2 represents the steps completed with the assistance of a verbal prompt on the task of facewashing. The erratic character of the line is typical of Jack's performance during skill training. The dashed line represents the point at which skill training was suspended and the component response of rub was practiced. Jack reached criterion on the second training session and maintained it for three consecutive sessions. The task was reintroduced with the rub integrated and Jack was quickly able to perform the whole task.

Summary

Severely handicapped students with behavior problems are frequently in danger of being removed from society. They are placed in large congregate care institutions or nursing homes where they are treated as indigent medical patients. They are not exposed to the normal challenges and rewards of community living and are treated as a deviant population rather than as fellow citizens. New techniques and service

delivery systems are needed to allow institutionalized students to reenter society or to prevent placement of those who are at risk for institutionalization. Pro-

ject S.A.I.L. developed a service delivery model that has made use of compliance training and generalized skill training to allow young people to participate in a normalized home setting. All of this has taken place in a remote rural area. We believe that this model and the emerging technology offers hope for the 130,000 citizens with severely handicapping conditions who remain in large hospitals or institutions.

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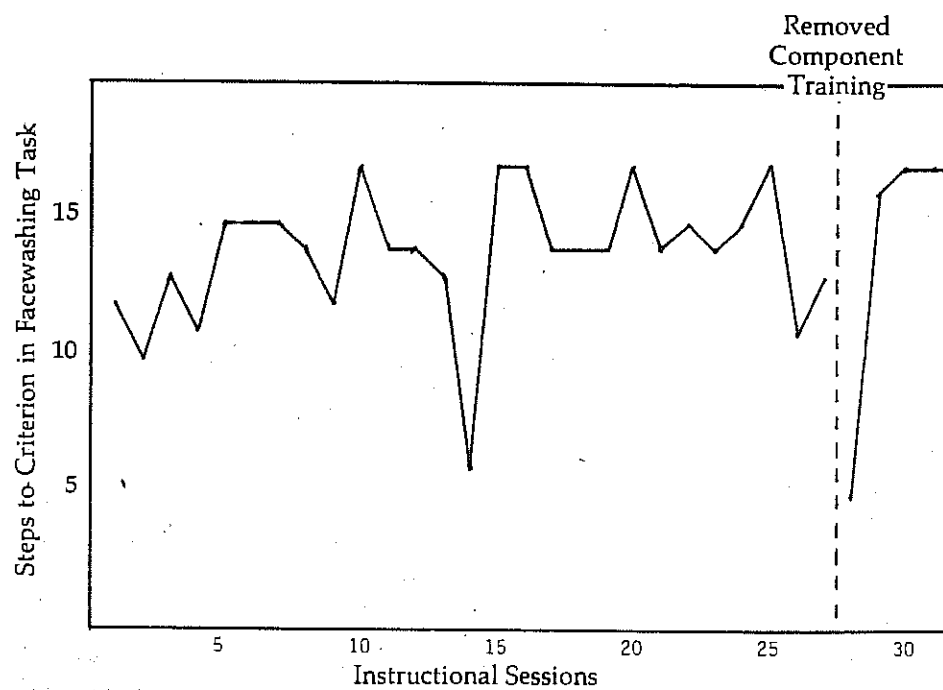


Figure 2. Number of steps performed on a 17-step task before and after removed component training.

Variables—Pacing and Praise

Baseline 1
During this phase, the teacher presented material from the DISTAR lessons by closely following the daily lesson scripts, with two exceptions. Although the teacher told students whether their responses were correct or correct, she did not verbally praise correct answers or instances of appropriate social behavior. If the group gave a correct response, the teacher could merely tell the students the answer was correct, and move on to the next step in the lesson. If the students gave an incorrect answer, the teacher could model the correct response and proceed to the next part of the lesson. The rate of teacher presentation of the instructional content was also controlled. To insure a slowly paced instructional delivery, the teacher was instructed to pause five seconds (by counting to herself) between the end of a student's response and the presentation of the next part of instruction. This procedure was similar to the one used by Carnine (1976). Baseline 1 lasted four days.

Rapid Pace 1
This phase lasted four days and was exactly the same as Baseline 1 except that the pace of instructional presentation was increased. Instead of creating a five-second pause between the completion of one task and the introduction of the next, the teacher was instructed to proceed immediately to the next part of the lesson. It must be emphasized that increased pacing had nothing to do with the rate at which the teacher spoke. Instead, pacing was defined as the time between task presentations. During this phase, the teacher gave only informational feedback to the student; she did not verbally praise their behavior. Corrections were done in the same manner as in Baseline 1.

Rapid Pace and Praise 1
This phase replicated the rapid pacing procedure and added praise for appropriate social behavior and correct academic responses. During each instructional presentation, the teacher identified instances of appropriate behavior and praised students, using short specific statements. The teacher reinforced behaviors such as eyes focused on the text, keeping hands and feet to oneself, staying in one's seat, and responding to the teacher's signal. Also, the teacher would praise student(s) or the group for responding correctly. This phase lasted five days.

Praise Only
Next, rapid pacing was dropped to demonstrate the differential effectiveness of praise vs. pacing. The teacher again presented material at a slow pace, using the five-second-pause technique. The teacher replicated the verbal reinforcement procedure described in the previous condition. This phase lasted three days.

Baseline 2
This phase was identical to Baseline 1 and lasted three days.

Rapid Pace 2
This phase replicated Rapid Pace 1 and lasted three days.

Rapid Pace and Praise 2
This phase, a replication of Rapid Pace and Praise 1, was important in

again showing the effects of the two variables in combination. It lasted three days.

Dependent Variables

Percent Correct. Percent Correct was calculated by dividing the number of opportunities available to respond to a teacher question or direction by the



CRAIG DARCH

number of correct answers. If the student did not correctly respond within one second of the teacher's signal, the response was marked as incorrect. In order for a student's response to be considered correct, the student had to voice the answer loudly enough to be heard by the observer, who was seated approximately four feet away. Data were taken during both individual turns and group responses. Procedures are discussed below.

Percent On-Task Behavior. On-Task was defined as eyes on the teacher or the presentation book, keeping hands and feet to oneself, and responding on time to the signal. Behaviors such as talking out, talking to classmates, playing with objects, out-of-seat without permission, or fighting were classified as off-task.

Data Collection Procedure

Three university graduate students served as primary data collectors. One collected data on On-Task Behavior while the other recorded Correct Responses. On alternating days, the third graduate student would observe and record either On-Task Behavior or Correct Responses to assess inter-observer reliability. Data were collected on the four subjects in the following manner. Observers who coded On-Task behavior used a ten-second-time-sampling technique; they would observe the student for nine seconds and record the student's behavior during the tenth second. If the student was engaged in appropriate behavior for the entire nine seconds, the observers would record a slash (/) in the appropriate interval on the data sheet. If the student was engaged in any inappropriate behavior during the nine seconds, the observers recorded a 0 in the specific interval. A different student was coded each ten-second interval. The observers systematically coded the four subjects in a predetermined order; therefore both observers were recording the same subject at the end of each ten-second interval. One complete rotation through the subjects took forty seconds and the pro-

cess was repeated continuously for the duration of the session.

The technique to record Correct Responses followed the procedures described by Carnine (1976). Each subject was recorded individually for five consecutive tasks, even though all subjects responded to each task. A task was defined as a teacher presentation of either a sound or a word. For example, each task required the students to: (a) give the sound that a letter or letter combination made, (b) sound out a word, (c) to read the word as a whole unit. This cycle was repeated numerous times during the 20 minute lesson.

Results and Discussion

Inter-observer agreements for on-task behavior ranged from 80% to 95%, with a mean of 90%; for percentages of correct answering, they ranged from 88% to 100% with a mean of 95%.

Accuracy

The results on the percentage of Correct Responses for each subject are shown in Figure 1. Each student was performing well below acceptable level during the Baseline 1 condition. Each student's performance was affected by the introduction of each phase of the experimental intervention. With the introduction of the first component of the intervention, Rapid Pace 1, each student demonstrated an increase in accuracy. This increase in performance was replicated in the Rapid Pace 2 condition. This consistent effect shows that teachers of LD students can improve

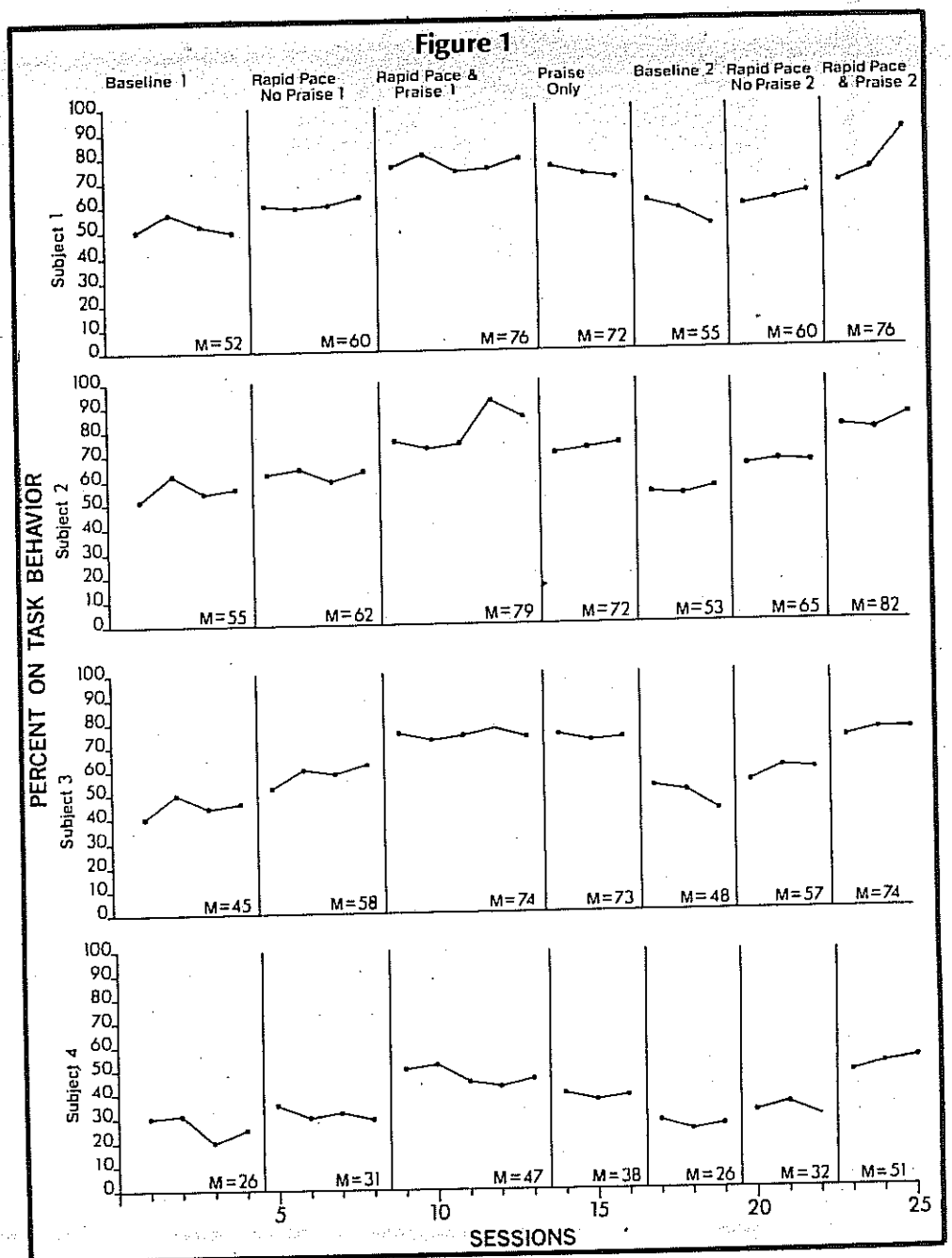
academic performance merely by increasing the rate of instructional presentation. This finding replicates Carnine's (1976) study. This result also supports the findings of a correlational study conducted by Gersten, Carnine, and Williams (1982), in which the students of teachers who consistently paced their lessons briskly gained more in reading achievement than their peers. It is important to note that this increase in pacing was not due to the teacher's speaking more quickly. Rather, the pauses between each segment of the lesson were reduced.

The combination of Rapid Pacing and Praise led to an even stronger effect. Students 1 and 2 improved from a baseline accuracy of 40% to 86% and 79%, respectively. Student 3's growth was not as dramatic (from 53% to 65%). Student 4 was the lowest performer in the group. Though he demonstrated some growth in accuracy (18% to 31%), he continued to perform well below acceptable levels.

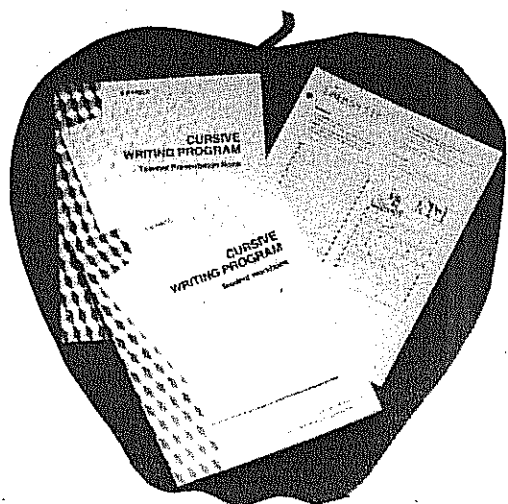
When the Praise Only condition was administered, performance gains on Correct Responses are maintained in student 3, while slight decreases are shown in the three other students.

Levels of performance during the last three phases replicate the results in the first three conditions of the experiment. The finding that the combination of Rapid Pacing and Praise can produce powerful increases in performance of LD students is an important finding for the classroom teacher.

Continued on Page 11



APPLES FOR TEACHER



Cursive Writing Program

AUTHORS Samuel Miller, Siegfried Engelmann
RANGE Third and fourth grade students or older students poor in cursive skills.

DESCRIPTION The *Cursive Writing Program* is a 140 lesson direct instruction program that teaches how to form the various letters, create words, write sentences, and write faster and more accurately. Special features include a simplified orthography, emphasis on high-letter combinations, and design features such as the slant arrow to insure correct paper placement. Exercises require only

15-20 minutes of daily work.

ADMINISTRATION The program is suitable for individuals, small groups, or an entire class.

COMPONENTS *Teacher Presentation Book* includes • Detailed specifications for each lesson • Complete information and reproducible material for placement testing • Information on how to supplement the program • *Student Workbook* includes • Practice papers for each lesson • Point Summary Chart

440j	<i>Cursive Writing Program</i> Teacher Presentation Book	15.95
441j	<i>Cursive Writing Program</i> Student Workbook (1 ea.)	4.25
442j	<i>Cursive Writing Program</i> Student Workbook (pkg. of 5)	21.25

I Love Library Books

AUTHORS Janice Jensen, Siegfried Engelmann

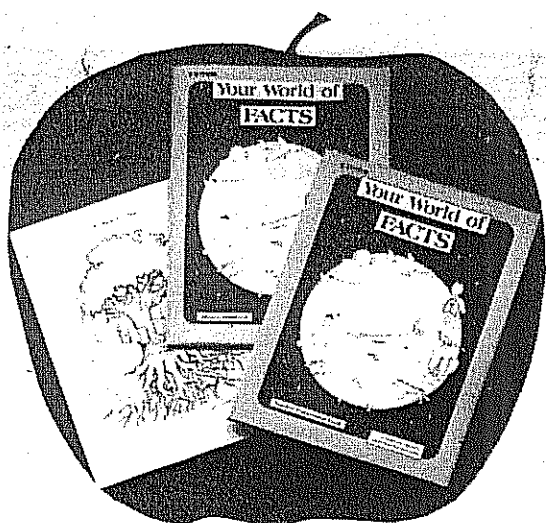
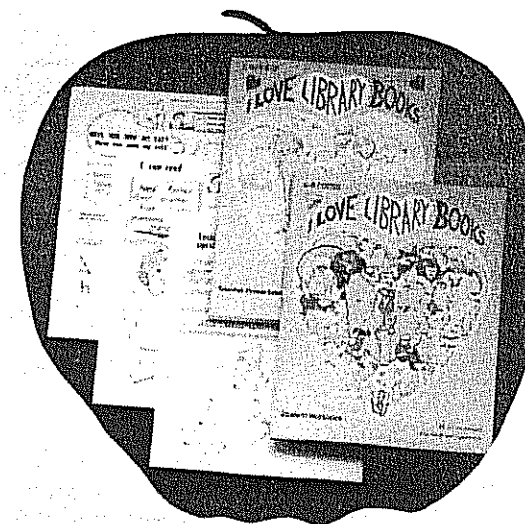
RANGE Students with first grade reading skills.

DESCRIPTION *I Love Library Books* provides details for introducing 37 popular children's books as an integral component of a first grade reading program. A computer analysis has keyed each book's vocabulary with the words presented in 8 major basal reading programs so that the selected books will match the child's skills and ensure a successful reading experience. Children using this program usually start reading library books by February.

ADMINISTRATION Either the librarian or teacher may administer this program.

COMPONENTS *Teacher Presentation Book* includes • Complete lesson plans for introducing 37 books • Computer analysis chart matching each book with a specific page and text of 8 basal reading programs • Procedures for record-keeping and assessment • Creative, time-efficient reinforcement activities • *Student Workbook* includes • Introductory sheets for each book • Student record sheet • Supplementary worksheets

444j	<i>I Love Library Books</i> Teacher Presentation Book	15.95
445j	<i>I Love Library Books</i> Student Workbook (1 ea.)	4.25
446j	<i>I Love Library Books</i> Student Workbook (pkg. of 5)	21.25



Your World of Facts

AUTHORS Siegfried Engelmann, Karen Davis, Gary Davis

RANGE Third through fifth grade students, and remedial learners who read on at least the beginning third grade level.

DESCRIPTION *Your World of Facts* is designed to supplement science and social studies programs, preteaching key facts and relationships. The series was written in response to the problem that students are often so concerned with the vocabulary of science and social studies texts that they fail to understand the concepts. Simple charts and pictures present each set of facts, and

a game format provides impetus and practice. The 40 lessons require 45-50 minutes each, but only 15 minutes of teacher-directed time.

COMPONENTS *Teacher Presentation Book* contains guide information and instructions for each lesson • *Student Workbooks* are nonconsumable and contain 25 topics, including the solar system, the respiratory system, continents, oceans, and the internal combustion engine • Reproducible scoresheet • Reproducible certificate

448j	<i>Your World of Facts</i> Teacher Presentation Book	24.95
449j	<i>Your World of Facts</i> Student Workbook (1 ea.)	4.25
450j	<i>Your World of Facts</i> Student Workbook (pkg. of 5)	21.25

Speed Spelling

AUTHOR Judy Proff-Witt

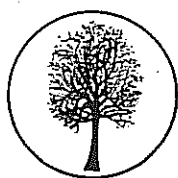
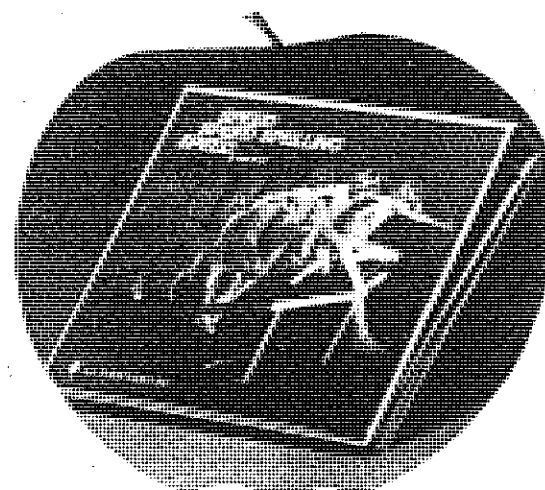
RANGE Learning disabled and retarded children who have not mastered grade school spelling skills.

DESCRIPTION *Speed Spelling* is an individualized, phonic program designed to increase spelling speed and accuracy following a systematic development of sound-to-letter correspondence. A placement test determines each student's level. Each of the 93 lessons teaches word reading, word writing, and sentence writing, and contains instructional objectives and detailed directions.

ADMINISTRATION Teachers, students, aides, or other paraprofessionals may act as tutors.

COMPONENTS *Manual* includes • Placement test • Cycling tests • 93 lessons with complete instructions • Adaptation procedures for classroom settings • *Student Book* includes a record of performance and is the only consumable part of the program • *Word List Packet* contains large-letter words and is reproducible

252j	<i>Speed Spelling Kit</i> , manual, 20 Student Books, plus Word List Packet	72.95
253j	<i>Speed Spelling Student Books</i> (pkg. of 20)	9.95



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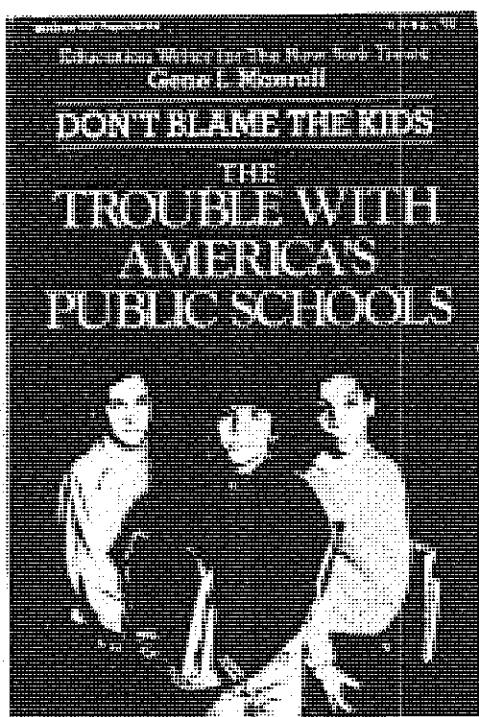


Maeroff, Gene I. *Don't Blame the Kids: The Trouble with America's Public Schools*. New York: McGraw-Hill, 1982. (\$6.95)

Gene Maeroff is an award-winning educational writer for the *New York Times*. He has written a far-reaching and provocative book which will raise the eyebrows of teachers, administrators, school boards, parents, and other taxpayers. If these various audiences each take an evening or two to peruse this highly readable volume, then begin discussing it with each other, the book could provide a beginning for educational change in many communities.

Maeroff's nine chapters cover a broad range of contemporary topics in public education, including: attributing blame for student failure, societal pressures on the schools, minimum competency testing, inner city schools, teaching the basics in education, the high school-college gap, issues in the teaching profession, school finance, and parent involvement.

Most of the pages in this volume seem to be dedicated to lamenting how bad things have become in public education. If the book had a fault, it is this lack of



balance between lamentations and proposed solutions. Still, Maeroff consistently concludes with a reminder about what the schools *can* accomplish and issues a charge to his readers to go out and accomplish similar—or better

things.

I agree with Maeroff's assessment that it is not the students who are to blame for the woes of education. Neither are those problems the fault of teachers, parents, or administrators *alone*. Perhaps the fairest indictment would be that it is the adults, collectively, who are to blame when students do not learn. The responsibility is often pinned on teachers, but it must be shared equally—if not predominantly—by school administrators and parents, the final authority figures in the school and the home, respectively. Fixing blame is not as productive however, as is expecting leadership, commitment, and high expectation on all fronts—at the classroom, building, and district levels, and in the home. Maeroff makes this point, and it is hard to argue with it.

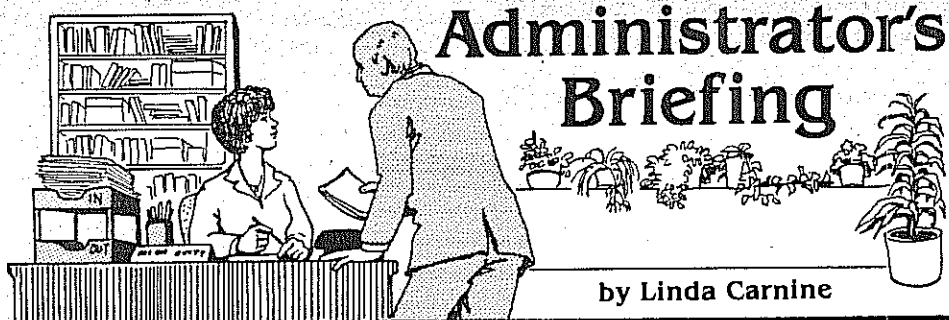
Maeroff does an excellent job of providing a clear, concise discussion of the influence of time on student achievement. He addresses this issue in all its facets: school entry age, length of school year, length of school day, relative time allocation, efficiency of time use, and time on task. In his chapter on high school programs, Maeroff nicely extends the issue of time allocation in discussing

core subjects vs. electives. His treatment of the gap between high school and college and his suggestions for bridging it are important contributions to our understanding the teaching-learning relationship across the entire range of public school grades.

In the final portion of the book, Maeroff returns to a discussion of external forces which significantly affect the quality of schooling: teacher training, school finance, public support, and parent involvement. Here, too, Maeroff's disappointment with the current status of our schools is clear. Still, he leaves the reader with the belief that something can be—and must be—done.

Maeroff is a man who feels strongly about education—its problems and its potential; that much is clear. He writes clearly and convincingly with considerable style. Perhaps the lamentation with which he writes should not be viewed as a criticism. There is a strong need for more of us to be concerned about what is going on. If enough of us become provoked by his message to act, perhaps we can begin to correct some of education's problems.

reviewed by
Stan Paine



John Chadwick
Irvington Elementary School
Portland, Oregon

The challenges associated with properly implementing Direct Instruction programs in public schools are undoubtedly familiar to many readers. My own experience may be instructive nonetheless. The school I serve has 585 children from kindergarten through 5th grade and a staff of 50+ teachers, aides, and support personnel. Our population of children is a liberal mix of every socio-economic and racial background. Chapter I (Title I) children are "hard to teach," but they are not the most difficult children in Portland. Last year (1982-83) we began using *DISTAR I* and *II* with all 1st and 2nd grade children in our Chapter I reading program. At these grade levels, we served approximately 60 children. Children are grouped for instruction within and across classes as needed. The classroom teacher and the Chapter I teacher work on consecutive lessons, thus doubling the number of lessons covered per day. Every child finishes *DISTAR* Reading I and many finish Reading II in 1st grade. Children transferred to our school during or after

1st grade take longer. Our adopted reading program is *Houghton-Mifflin*. When a child concludes *DISTAR II* we provide (with some difficulties) a transition to *Houghton-Mifflin*. Spring scores on the CTBS (California Test of Basic Skills) show children in 1st grade achieving at the 50th percentile ($N = 27$) and 2nd graders at the 47th percentile ($N = 31$).

These results, while encouraging, are balanced against significant implementation problems that have more to do with the politics of program implementation than with the details of teaching or teacher supervision. Some problems that I have addressed are: (1) teacher indifference to the programs, (2) parent opposition to programs, and (3) district inertia with respect to change. Other problems that remain unsolved have to do with the teachers' contract and a lack of serious resolve at the district level to do meaningful implementation.

Teacher indifference to Direct Instruction (as well as some vocal opposition) was not an issue I met head on. Prior to program selection, I appointed a representative group of teachers to serve as a visitation team. They observed good Direct Instruction implementations

and reported back to the staff. They were enthusiastic. As long as the schools visited serve the same population your school serves, this is a good way to gain support from teachers. I strongly recommend this practice over recitations of Follow-Through data or discussions of program merits at late afternoon staff meetings. Teachers, like most of us, like to see programs working. Assuming there are no obvious reasons to disqualify the experience (i.e. teachers are different, class sizes are radically smaller, children are smarter), teachers will support the use of *DISTAR* programs. I also avoided the use of district "experts" or publisher representatives to do presentations. I asked the teachers from the schools where we observed to discuss program details, answer questions, give testimonials and present available data. Following presentations by representatives of other publishers, it was evident to my staff which program was going to meet the children's needs. At the end of the selection process, we voted *DISTAR I* and *II* as the program choice for our Chapter I children. A vocal minority staff continued to resist the program, but not in significant ways.

Parent opposition to Direct Instruction was handled similarly. No parent was made to feel that their child had to be in the Chapter I program. However, it was made clear that if the child was to participate in supplementary instruction in Chapter I, that the program would be *DISTAR I* and *II*. Vocal parent opposition was often encouraged by a minority of staff resisting the program and wanting to build a parent following for that. Most parent opposition of the form,

"not a creative program for my child," "a lock-step program," etc., was creatively ignored. My tactic with other parents was to have them work with their own child at home for two weeks doing sound practice, word practice, and passage reading on previously covered lessons. Few parent criticisms persisted, though they were intense initially. Many parent critics became strong supporters after a more detailed orientation and observation of the program.

District inertia toward Direct Instruction programs in my school took many creative forms: (a) there were elaborate rationales to write justifying the use of *DISTAR* in place of district recommended programs for Chapter I children, (b) there was the withholding of district resources for inservice training of teachers, and (c) frequent difficulties in securing books, workbooks, and other needed materials. All of the above problems were successfully tackled. Our school had the resources to order additional materials, we were able to pay teachers to take needed training (not, however, when it was most desirable), and rationales were easily written. The most difficult problem was providing inservice to teachers and trying to work it around their teaching day. Without a contract provision making it possible to command teachers' workshop participation, I had to work by agreement with them as to when, how, and under what circumstances they might receive program rationale and format practice. This was after the school year had begun. I had to cover their classes in order to

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The Monterey DILE Program for Students

by Russell Gersten, Mary Alice Brockway and Nancy Henares

Direct Instruction for those with Limited English (DILE) at Marina Del Mar School, Monterey

Reported by Russell Gersten
University of Oregon

Evolution of the Program

In 1969 there were no non-English or minority children at the Marina Del Mar school in Monterey, California. The school population consisted of white low-income (or welfare) families. Because of the low income level, the school became eligible for Title I funds. DISTAR Reading and Language were introduced in kindergarten and the primary grades.

In 1970, four non-English speaking kindergarteners entered the program. Since there was no formal English as a Second Language (ESL) program, these children were taught using DISTAR Reading and Language programs. This appeared to be an efficient and successful approach, so all new ESL students in the primary grades were included in the Direct Instruction program. The DILE program was developed by and directed by Mary Alice Brockway and Nancy Henares.

At that time, 4th-6th grade ESL students at Marina Del Mar School were not taught any reading at all for three to five months to allow for English language development. In the meantime, their younger siblings in the primary grades were being instructed in both DISTAR Reading I and DISTAR Language I from the first day of school. Often, the intermediate students did not "pick-up" the language and felt inferior to their younger brothers and sisters, who spoke more fluently, and also could read English. Many parents (and children as well) asked that the older students be placed in DISTAR. Intermediate children came voluntarily after school or during recess to learn DISTAR Reading. A group of parents requested a night DISTAR class so that they could also learn using the same method as their children. At this point, the project teachers realized that all K-6 ESL students needed the DISTAR Language program.

Beginning in 1979, an ungraded model was developed for ESL students in kindergarten through sixth grade. Some of the content of the developmental (DISTAR) programs was too simple or childish for the intermediate grade students. A combination program was designed for them including the newly developed remedial Direct Instruction programs in oral reading and reading comprehension—the Corrective Reading Programs. The DILE program has always included some English-speaking students. As soon as ESL students become proficient in the English language, they are placed in regular classes in the school.

Major Components of the DILE Program

1. *The Direct Instruction Model of classroom organization and teaching*

strategies. Approximately 95 students are involved in the program each year. Instruction takes place in an ungraded learning complex, staffed by 3 teachers and 4 paraprofessional aides. (Three of the 4 aides are bilingual.) The ungraded complex allows for students to be placed according to correct academic skill level. Both English-speaking and limited English-speaking students are involved in the program.

Almost all instruction takes place in small groups of 6 to 10. Students are grouped by ability for instruction in reading, oral language, and mathematics. The Direct Instruction settings provide the opportunity for many student/teacher interactions within a 30-minute group. Most of the responses are oral. This is particularly important for ESL students. Oral practice is followed by worksheet practice. The worksheets require the students to use and apply the skills that they have just practiced orally.

The teaching strategies built into the DISTAR programs are designed to assure mastery of each lesson by every child. These strategies are detailed in Becker and Carnine (1980).

2. *Use of developmental and remedial Direct Instruction programs for ESL students.* Previous research in the Follow Through Programs in Uvalde, TX, and San Diego, CA, has demonstrated that the Direct Instruction Model can be effective in teaching mathematics and oral reading accuracy to non- and limited-English speaking students in the primary grades (Gersten, 1981a; 1981b; Gersten, Carnine, and Williams, 1982).

However, no program has been developed which adapts and refines these procedures to include:

- The needs of limited English-speaking students in the intermediate grades.
- The domains of reading comprehension and written language expression assessed in the intermediate grades.

Beginning students with no English language skills, regardless of grade level, receive two language lessons a day. In the first, they cover material from Language I. The second sessions include strands from Language II and III that teach the children the structure of the English language. Brockway and Henares found that Asian children would "pick up" nouns for everyday objects fairly easily from their peers. However, they needed intensive instruction in how sentences are developed and spoken in English, since sentence construction is totally different in Korean, Japanese, or Vietnamese.

In its intermediate grade (3-6) program, the DILE model combines developmental materials intended for 5-8 year olds with remedial programs intended for 9-17 year olds. The remedial reading programs used are the Corrective Reading Program in Decoding and Comprehension. In math, the remedial/developmental distinction appeared less important to us because the language demands of the series are greatly reduced, and the issue of "childish" content is not terribly important. When students in the intermediate grades com-

pleted DISTAR Arithmetic III, they were placed in the district's basal arithmetic series. The basal arithmetic series was taught using the principles of Direct Instruction cited above.

There are several reasons for this combination of remedial and developmental programs in reading. The older Asian students need the intensive work in English language production and receptive language provided by DISTAR Language I, and need to be taught the basic word-attack strategies taught in Reading I, but also want to read age-appropriate material.

The Corrective Reading Programs provide such material. By doubling up on DISTAR Language and the Comprehension strand of the Corrective Reading Series, the students receive a concentrated program for English language development.

3. *Structured English immersion.* This is probably the most unique feature of DILE. A major principle in the DILE model is that ESL students need to learn to understand, speak, read, and write English as rapidly as possible. We believe that ESL students learn English most efficiently when attention is directly focused on their oral language. Learning a new language is like acquiring any other skill—the more a child practices the skill throughout the day, the more quickly he or she will master the skill. However, as in most areas of education, mere practice is not enough. The key to a structured immersion is that all instruction takes place in English, *but at a level understood by the student.* (See Baker & DeKanter, 1981). The carefully controlled vocabulary and the carefully sequenced lessons in the Direct Instruction programs allow teachers to "preteach" any new words that come up in the math, reading, or language lessons. Though virtually all instruction is conducted in English, there are always several bilingual instructors in the class who understand the child's native language. The curriculum programs are structured so that prior knowledge of English is *not assumed.* New material and concepts are explained so that they can be understood by the students.

Both ESL and English speaking students are in the learning complex. Thus, ESL students are provided with English-speaking role models.

4. *Non-graded approach.* Students are placed in instructional groups in language, reading, and math based on their current skill level. Thus, a fourth grader may be in a beginning (kindergarten-level) English oral language program, a first grade reading program and a third grade math program.

Rather than isolate our limited English students by placing them in a separate ESL classroom they are mainstreamed into a learning environment where they encounter English speaking children working at many skill levels. The student "grouping" is temporary; as skills develop, students are moved as rapidly as possible through our academic continuum.

Students are assessed once every 4 weeks in each academic area (reading language, math, spelling) on criterion referenced tests. These test results are used to accelerate students for whom the work is too easy, determine which children need remedial work, and regroup students when necessary.

5. *Use of bilingual aides as instructors* The paraprofessional aides serve two major purposes in the program. They are trained (by the head teachers) to teach daily lessons to small groups of children in the Language and Arithmetic programs. Essentially, they serve as additional teachers, allowing for small group instruction in all academic areas. In addition, the bilingual aides help the non-English speaking students adjust to the environment, occasionally serving as translators during a child's first few months.

6. *Cultural activities.* Due to the fact that there are many ethnic groups prevalent at Marina Del Mar School, multicultural activities are centered around the cultures represented. Each month a different culture is featured. Monthly multicultural discussions emphasize the similarities between the various cultures, as well as their uniqueness. The students become familiar enough with the different cultures to readily see similarities. (For example, Koreans and Japanese both sleep on the floor, sit on the floor, and eat with chopsticks.) The children discover that sushi (Japanese) and kimbab (Korean) are both dishes utilizing rice and seaweed.

Everyone is encouraged to "share" things from the various cultures. Cultural displays depict the artifacts, dolls, toys, games, costumes, etc. Not only do the children learn about cultural heritage, but they also learn ethnic songs, games, and dances, taught by other students or staff members. The culminating cultural activity has been cooking a complete meal, featuring the food from the particular culture studied. This lunch is prepared by the children and then enjoyed by students, staff, parents, and guests.

Results of the Evaluation

Since the testing procedures and instructional programs are different for the primary (first and second) grade students and the remaining (third through sixth grade) students, separate analyses were made for each group. The reader is reminded that all instruction took place in a non-graded setting. Students were placed in instructional groups on the basis of current skill level, not age or grade level.

Primary Grades

Limited and non-English speaking students in the DILE program during the first and second grade perform at a significantly higher level in Reading and Math on the Comprehensive Test of Basic Skills (CTBS), Form S, 1973 ed., than comparable students in the district's bilingual program.

With Limited English (ESL)

The Language Assessment Scale (LAS) was used as a supplemental measure to ensure that the DILE and traditional bilingual samples were equivalent in English language proficiency upon entry into the first grade. The LAS provides an overall picture of a child's oral language proficiency in English. Scores on the LAS range from 1 to 4. 1 means non-English speaking; 2 and 3 represent degrees of limited English language proficiency, and 4 means fluent in English.

The comparison group was randomly selected from the district's central computer file. The computer file included the student's ethnicity and their LAS score upon entry in school. The comparison group was selected from the file by reviewing the files of all ESL students who entered first grade by October 31 of the school year and spent two years in the district's bilingual program. The ethnic distribution and mean entry LAS score for the comparison groups were equivalent.

The DILE students included children from Korea, Vietnam, Japan, the Philippines, and Samoa.

Table 1 presents the number (and percent) of DILE students and comparison students at or above grade level at the end of second grade in Reading, Language, and Math. The data for 1980 and 1981 are grouped. The mean student performance of the DILE students is above national norms.

Statistical analyses revealed that significantly more DILE students were at or above grade level in Reading and Math. (The effect was not significant in Language.) Seventy-five percent of the students were at or above grade level in Reading, and 96 percent in Math. For the students in the traditional bilingual program, only 19 percent were at or above grade level in Reading, 62 percent were above grade level in Math.

The effects of the DILE program were maintained during the third and fourth grades. Table 2 presents third and fourth grade achievement data for all DILE students who started school in 1978 and who were still in Marina Del Mar School. Student performance remained essentially stable in Reading and Language. While there was a drop in Math from second to third grade for the 1979 starting group, students were still well over the national median. One and two years after the students left the DILE program, they were performing well above the national median, at approximately the same level as when they left the program in 1980.

Effects on the English Speaking Children Who Participated

The English speaking students all performed above the national median, and above the median level for the district (which is between the 60th and 70th percentiles). Average scores were the 79th percentile in Reading, 77th in Language, and 81st in Math. Though the absence of a control group precludes drawing any strong inferences from these data, it is clear that the English speaking students in DILE perform at high levels in all domains. It appears the DILE experience was not harmful to them academically, and probably provided a valuable cultural experience.

Intermediate (Third through Sixth) Grades

The students in the program in grades 3 to 6 spoke Vietnamese, Korean, Japanese, Laotian, Hispanic, and German languages. Significant improvement was found in all achievement domains for the 1980-81 group. For the

1981-82 students, significant growth was found on Reading and Language for third graders; and Reading, Language, and Math for grades 4 to 6 (see Table 3).

Summary

These data indicate that non- and limited-English speaking students in a structured immersion program follow-

Table 1

Number and Percent of Students At or Above the National Median on the CTBS

	Total Reading		Total Language		Total Math	
	Below	At or Above	Below	At or Above	Below	At or Above
DILE	7 25%	21 75%	8 27%	20 71%	1 4%	27 96%
Bilingual	13 81%	3 19%	9 56%	7 44%	6 38%	10 62%

Table 2

Followup of DILE Students on the CTBS

1978 Starting

	(N=10) End of 2nd Grade (May, 1980)	(N=10) End of 3rd Grade (May, 1981)	(N=9) End of 4th Grade (May, 1982)
	Percentile	Percentile	Percentile
Total Reading	63rd	65th	65th
Total Language	71st	75th	67th
Total Math	86th	67th	65th

1979 Starting

	(N=9) End of 2nd Grade (May, 1981)	(N=9) End of 3rd Grade (May, 1982)
	Percentile	Percentile
Total Reading	73rd	78th
Total Language	74th	68th
Total Math	80th	83rd

Table 3

Norm-Referenced Comparison Pre- and Posttest Scores on the CTBS
(Percentile Equivalents)

1980-81 School Year: Grades 3 to 6 (N=15)

	Pretest (May, 1980) Percentile	Posttest (May, 1981) Percentile
Total Reading	4th	19th
Total Language	5th	23rd
Total Math	13th	45th

1981-82 School Year

	Pretest (May, 1981) Percentile	Posttest (May, 1982) Percentile
Grade 3 (N=10)		
Total Reading	17th	47th
Total Language	16th	41st
Total Math	39th	50th
Grades 4, 5, 6 (N=10)		
Total Reading	4th	23rd
Total Language	4th	30th
Total Math	24th	43rd

ing the DILE model: (a) make significantly greater gains in bilingual programs, and (b) perform at or above national median levels after only one or two years of the program. In addition, the followup data show that students who began in DILE in the primary grades maintain their level of performance after they leave the program and enter the mainstream.

In a recent, exhaustive review of research on the effectiveness of approaches toward teaching limited English speaking students, Baker and DeKanter (1981) reported a dearth of empirical findings on effective approaches toward teaching these students. Two Canadian studies (Lambert & Tucker, 1972; Barik et al., 1977) found structured immersion approaches superior to traditional bilingual approaches. The Joint Dissemination Review Panel had validated the English immersion Direct Instruction Follow Through programs in San Diego, California, and Uvalde, Texas, as effective approaches for teaching mathematics and beginning oral reading to NES/ESL students.

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Sixth Annual DI Conference in Kalamazoo August 15-19

The Sixth Annual Direct Instruction Conference at Kalamazoo will be held August 15-19, 1983, at Western Michigan University, Kalamazoo, MI. The conference is co-sponsored by the Department of Psychology and the Division of Continuing Education. Graduate credit in Psychology or Education available.

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Report by T.H. Bell's Commission on Achieving

A Nation at Risk: The Imperative for Educational Reform

Editor's note — Last year, U.S. Education Secretary T.H. Bell appointed a National Commission on Excellence in Education to study the state of education in America. Last month, the Commission released its report. In the past few weeks, the report has stirred considerable discussion in educational circles. We thought that a number of our readers might not have had the opportunity to read the full text of the report but would be interested in doing so. Therefore, we are reprinting the entire text in two parts. In this part, we present the portion of the report dealing with the problems facing education in this country today and with what is possible to achieve in educating our children. In the next issue, we will reprint the Commission's findings, recommendations, and conclusions. A related editorial appears on page 2.

Our nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world.

This report is concerned with only one of the many causes and dimensions of the problem, but it is the one that undergirds American prosperity, security, and civility. We report to the American people that while we can take justifiable pride in what our schools and colleges have historically accomplished and contributed to the United States and the well-being of its people, the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a nation and a people. What was unimaginable a generation ago has begun to occur—others are matching and surpassing our educational attainments.

If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in student achievement made in the wake of the Sputnik challenge. Moreover, we have dismantled essential support systems which helped make those gains possible. We have, in effect, been committing an act of unthinking, unilateral educational disarmament.

Our society and its educational institutions seem to have lost sight of the basic purposes of schooling, and of the high expectations and disciplined effort needed to attain them. This report, the result of 18 months of study, seeks to generate reform of our educational system in fundamental ways and to renew the nation's commitment to schools and colleges of high quality throughout the length and breadth of our land.

That we have compromised this commitment is, upon reflection, hardly surprising, given the multitude of often conflicting demands we have placed on our nation's schools and colleges. They are routinely called on to provide solutions to personal, social, and political problems that the home and other institutions either will not or cannot resolve. We must understand that these demands on our schools and colleges often exact an educational cost as well as a financial one.

On the occasion of the Commission's first meeting, President Reagan noted the central importance of education in American life when he said: "Certainly there are few areas of American life as important to our society, to our people, and to our families as our schools and colleges." This report, therefore, is as much an open letter to the American people as it is a report to the Secretary of Education. We are confident that the American people, properly informed, will do what is right for their children and for the generations to come.

The Risk

History is not kind to idlers. The time is long past when America's destiny was assured simply by an abundance of natural resources and inexhaustible human enthusiasm, and by our relative isolation from the malignant problems of older civilizations. The world is indeed one global village. We live among determined, well-educated,

and strongly motivated competitors. We compete with them for international standing and markets, not only with products but also with the ideas of our laboratories and neighborhood workshops. America's position in the world may once have been reasonably secure with only a few exceptionally well-trained men and women. It is no longer.

The risk is not only that the Japanese make automobiles more efficiently than American and have government subsidies for development and export. It is not just that the South Koreans recently built the world's most efficient steel mill, or that American machine tools, once the pride of the world, are being displaced by German products. It is also that these developments signify a redistribution of trained capability throughout the globe. Knowledge, learning, information, and skilled intelligence are the new raw materials of international commerce and are today spreading throughout the world as vigorously as miracle drugs, synthetic fertilizers, and blue jeans did earlier. If only to keep and improve on the slim competitive edge we still retain in world markets, we must dedicate ourselves to the reform of our educational system for the benefit of all—old and young alike, affluent and poor, majority and minority. Learning is the indispensable investment required for success in the "information age" we are entering.

Our concern, however, goes well beyond matters such as industry and commerce. It also includes the intellectual, moral, and spiritual strengths of our people which knit together the very fabric of our society. The people of the United States need to know that individuals in our society who do not possess the levels of skill, literacy, and training essential to this new era will be effectively disenfranchised, not simply from the material rewards that accompany competent performance, but also from the chance to participate fully in our national life. A high level of shared education is essential to a free, democratic society and to the fostering of a common culture, especially in a country that prides itself on pluralism and individual freedom.

For our country to function, citizens must be able to reach some common understanding on complex issues, often on short notice and on the basis of conflicting or incomplete evidence. Education helps form these common understandings, a point Thomas Jefferson made long ago in his justly famous dictum:

"I know no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them but to inform their discretion."

Part of what is at risk is the promise first made on this continent: all, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided, can hope to attain the mature and informed judgment needed to secure gainful employment and to manage their own lives, thereby serving not only their own interests but also the progress of society itself.

Indicators of the Risk

The educational dimensions of the risk before us have been amply documented in testimony received by the Commission. For example:

►International comparisons of student achievement, completed a decade ago, reveal that on 19 academic tests American students were never first or second and, in comparison with other industrialized nations, were last seven times.

►Some 23 million American adults are functionally illiterate by the simplest tests of everyday reading, writing, and comprehension.

►About 13 per cent of all 17-year-olds in the United States can be considered functionally illiterate. Functional illiteracy among minority youth may run as high as 40 per cent.

►Average achievement of high-school students on most standardized tests is now lower than 26 years ago when Sputnik was launched.

►Over half the population of gifted students do not match their tested ability with comparable achievement in school.

►The College Board's Scholastic Aptitude Tests demonstrate a virtually unbroken decline from 1963 to 1980. Average verbal scores fell over 50 points and average mathematics scores dropped nearly 40 points.

Members of the Commission

David P. Gardner, president, University of Utah, and president-elect, University of California, chairman

Yvonne W. Larsen, immediate past president, San Diego City School Board, vice-chairman.

William O. Baker, former chairman of the board, Bell Telephone Laboratories (Murray Hill, N.J.)

Anne Campbell, former Nebraska commissioner of education.

Emeral A. Crosby, principal, Northern High School (Detroit).

Charles A. Foster, Jr., immediate past president, Foundation for Teaching Economics (San Francisco)

Norman C. Francis, president, Xavier University of Louisiana.

A. Bartlett Giamatti, president, Yale University.

Shirley Gordon, president, Highline Community College.

Robert V. Haderlein, immediate past president, National School Boards Association (Girard Kan.).

Gerald Holton, professor of physics and professor of the history of science, Harvard University.

Annette Y. Kirk, Kirk Associates (Mecosta Mich.).

Margaret S. Marston, member, Virginia State Board of Education.

Albert H. Quie, former governor of Minnesota

Francisco D. Sanchez, Jr., superintendent, Albuquerque public schools.

Glenn T. Seaborg, professor of chemistry and 1952 Nobel Laureate in chemistry, University of California at Berkeley.

Jay Sommer, national teacher of the year, 1981-82

foreign-language department, New Rochelle High School (New Rochelle, N.Y.)

Richard Wallace, principal, Lutheran High School East (Cleveland Heights, Ohio)..

►College Board achievement tests also reveal consistent declines in recent years in such subjects as physics and English.

►Both the number and proportion of students demonstrating superior achievement on the S.A.T.'s (i.e., those with scores of 650 or higher) have also dramatically declined.

►Many 17-year-olds do not possess the "higher order" intellectual skills we should expect of them. Nearly 40 per cent cannot draw inferences from written material; only one-fifth can write a persuasive essay; and only one-third can solve a mathematics problem requiring several steps.

►There was a steady decline in science achievement scores of U.S. 17-year-olds as measured by national assessments of science in 1969, 1973, and 1977.

►Between 1975 and 1980, remedial mathematics courses in public four-year colleges increased by 72 per cent and now constitute one-quarter of all mathematics courses taught in those institutions.

►Average tested achievement of students graduating from college is also lower.

►Business and military leaders complain that they are required to spend millions of dollars on costly remedial education and training programs in such basic skills as reading, writing, spelling, and computation. The Department of the Navy, for example, reported to the Commission that one-quarter of its recent recruits cannot read at the ninth-grade level, the minimum needed simply to understand written safety instructions. Without remedial work they cannot even begin, much less complete, the sophisticated training essential in much of the modern military.

These deficiencies come at a time when the demand for highly skilled workers in new fields is accelerating rapidly. For example:

►Computers and computer-controlled equipment are penetrating every aspect of our lives—homes, factories, and offices.

►One estimate indicates that by the turn of the century millions of jobs will involve laser technology and robotics.

►Technology is radically transforming a host of other occupations. They include health care, medical science, energy production, food processing, construction, and the building, repair, and maintenance of sophisticated scientific, educational, military, and industrial equipment.

Analysts examining these indicators of student performance and the demands for new skills have made some chilling observations. Educational researcher Paul Hurd concluded at the end of a thorough national survey of student achievement that within the context of the modern scientific revolution, "We are raising a new generation of Americans that is scientifically and technologically illiterate." In a similar vein, John Slaughter, a former director of the National Science Foundation, warned of "a growing chasm between a small scientific and technological elite and a citizenry ill-informed, indeed uninformed, on issues with a science component."

But the problem does not stop there, nor do all observers see it the same way. Some worry that schools may emphasize such rudiments as reading and computation at the expense of other essential skills such as comprehension, analysis, solving problems, and drawing conclusions. Still others are concerned that an over-emphasis on technical and occupational skills will leave little time for studying the arts and humanities that so enrich daily life, help maintain civility, and develop a sense of community. Knowledge of the

humanities, they maintain, must be harnessed science and technology if the latter are to remain creative and humane, just as the humanities need to be informed by science and technology if they are to remain relevant to the human condition. Another analyst, Paul Copperman, has drawn a sobering conclusion. Until now, he has noted:

"Each generation of Americans has outstripped its parents in education, in literacy, and in economic attainment. For the first time in the history of our country, the educational skills of one generation will not surpass, will not even approach, those of their parents."

It is important, of course, to recognize that the *average citizen* today is better educated and more knowledgeable than the *average citizen* of a generation ago—more literate, and exposed to more mathematics, literature, and science. The positive impact of this fact on the well-being of our country and the lives of our people cannot be overstated. Nevertheless, *the average graduate* of our schools and colleges today is not as well educated as the *average graduate* of 25 or 35 years ago, when a much smaller proportion of our population completed high school and college. The negative impact of this fact likewise cannot be overstated.

Hope and Frustration

Statistics and their interpretation by experts show only the surface dimension of the difficulties we face. Beneath them lies a tension between hope and frustration that characterizes current attitudes about education at every level.

We have heard the voices of high-school and college students, school-board members, and teachers; of leaders of industry, minority groups, and higher education; of parents and state officials. We could hear the hope evident in their descriptions of outstanding programs and schools. We could also hear the intensity of their frustration, a growing impatience with shoddiness in many walks of American life, and the complaint that this shoddiness is too often reflected in our schools and colleges. Their frustration threatens to overwhelm their hope.

What lies behind this emerging national sense of frustration can be described as both a dimming of personal expectations and the fear of losing a shared vision for America.

On the personal level the student, the parent and the caring teacher all perceive that a basic promise is not being kept. More and more young people emerge from high school ready neither for college nor for work. This predicament becomes more acute as the knowledge base continues its rapid expansion, the number of traditional jobs shrinks, and new jobs demand greater sophistication and preparation.

On a broader scale, we sense that this undertone of frustration has significant political implications for it cuts across ages, generations, races, and political and economic groups. We have come to understand that the public will demand that educational and political leaders act forcefully and effectively on these issues. Indeed, such demands have already appeared and could well become a unifying national preoccupation. This unity, however, can be achieved only if we avoid the unproductive tendency of some to search for scapegoats among the victims, such as the beleaguered teachers.

On the positive side is the significant movement by political and educational leaders to search for solutions—so far centering largely on the nearly desperate need for increased support for the teaching of mathematics and science. This move-

Excellence in Education – Part I

ent is but a start on what we believe is a larger and more educationally encompassing need to improve teaching and learning in fields such as English, history, geography, economics, and foreign languages. We believe this movement must be broadened and directed toward reform and excellence throughout education.

Excellence in Education

We define "excellence" to mean several related things. At the level of the *individual learner*, it means performing on the boundary of individual ability in ways that test and push back personal limits, in school and in the workplace. Excellence characterizes a *school or college* that sets high expectations and goals for all learners, then tries in every way possible to help students reach them. Excellence characterizes a *society* that has adopted these policies, for it will then be prepared through the education and skill of its people to respond to the challenges of a rapidly changing world. Our nation's people and its schools and colleges must be committed to achieving excellence in all these senses.

We do not believe that a public commitment to excellence and educational reform must be made at the expense of a strong public commitment to the equitable treatment of our diverse population. The twin goals of equity and high-quality schooling have profound and practical meaning for our economy and society, and we cannot permit one to yield to the other either in principle or in practice.

To do so would deny young people their chance to learn and live according to their aspirations and abilities. It also would lead to a generalized accommodation to mediocrity in our society on the one hand or the creation of an undemocratic elitism on the other.

Our goal must be to develop the talents of all to their fullest. Attaining that goal requires that we expect and assist all students to work to the limits of their capabilities. We should expect schools to have genuinely high standards rather than minimum ones, and parents to support and encourage their children to make the most of their talents and abilities.

The search for solutions to our educational problems must also include a commitment to lifelong learning. The task of rebuilding our system of learning is enormous and must be properly understood and taken seriously: Although a million and a half new workers enter the economy each year from our schools and colleges, the adults working today will still make up about 75 per cent of the workforce in the year 2000. These workers, and new entrants into the work force, will need further education and retraining if they—and we as a nation—are to thrive and prosper.

The Learning Society

In a world of ever-accelerating competition and change in the conditions of the workplace, of ever-greater danger, and of ever-larger opportunities for those prepared to meet them, educational reform should focus on the goal of creating a Learning Society. At the heart of such a society is the commitment to a set of values and to a system of education that affords all members the opportunity to stretch their minds to full capacity, from early childhood through adulthood, learning more as the world itself changes. Such a society has as a basic foundation the idea that education is important not only because of what it contributes to one's career goals but also because of the value it adds to the general quality of one's life.

Also at the heart of the Learning Society are educational opportunities extending far beyond the traditional institutions of learning, our schools and colleges. They extend into homes and workplaces; into libraries, art galleries, museums, and science centers; indeed, into every place where the individual can develop and mature in work and life. In our view, formal schooling in youth is the essential foundation for learning throughout one's life. But without lifelong learning, one's skills will become rapidly dated.

In contrast to the ideal of the Learning Society, however, we find that for too many people education means doing the minimum work necessary for the moment, then coasting through life on what may have been learned in its first quarter. But this should not surprise us because we tend to express our educational standards and expectations largely in terms of "minimum requirements." And where there should be a coherent continuum of learning, we have none, but instead an often incoherent, outdated patchwork quilt.

Many individual, sometimes heroic, examples of schools and colleges of great merit do exist. Our findings and testimony confirm the vitality of a number of notable schools and programs, but their

very distinction stands out against a vast mass shaped by tensions and pressures that inhibit systematic academic and vocational achievement for the majority of students.

In some metropolitan areas basic literacy has become the goal rather than the starting point. In some colleges maintaining enrollments is of greater day-to-day concern than maintaining rigorous academic standards. And the ideal of academic excellence as the primary goal of schooling seems to be fading across the board in American education.

Thus, we issue this call to all who care about America and its future: to parents and students; to teachers, administrators, and school board members; to colleges and industry; to union members and military leaders; to governors and state legislators; to the President; to members of Congress and other public officials; to members of learned and scientific societies; to the print and electronic media; to concerned citizens everywhere. America is at risk.

We are confident that America can address this risk. If the tasks we set forth are initiated now and our recommendations are fully realized over the next several years, we can expect reform of our nation's schools, colleges, and universities. This would also reverse the current declining trend—a trend that stems more from weakness of purpose, confusion of vision, underuse of talent, and lack of leadership, than from conditions beyond our control.

The Tools at Hand

It is our conviction that the essential raw materials needed to reform our educational system are waiting to be mobilized through effective leadership:

- The natural abilities of the young that cry out to be developed and the undiminished concern of parents for the well-being of their children;

- The commitment of the nation to high retention rates in schools and colleges and to full access to education for all;

- The persistent and authentic American dream that superior performance can raise one's state in life and shape one's own future;

- The dedication, against all odds, that keeps teachers serving in schools and colleges, even as the rewards diminish;

- Our better understanding of learning and teaching, and the implications of this knowledge for school practice, and the numerous examples of local success as a result of superior effort and effective dissemination;

- The ingenuity of our policymakers, scientists, state and local educators, and scholars in formulating solutions once problems are better understood;

- The traditional belief that paying for education is an investment in ever-renewable human resources that are more durable and flexible than capital plant and equipment, and the availability in this country of sufficient financial means to invest in education;

- The equally sound tradition, from the Northwest Ordinance of 1787 until today, that the Federal Government should supplement state, local, and other resources to foster key national educational goals; and

- The voluntary efforts of individuals, businesses, and parent and civic groups to cooperate in strengthening educational programs.

These raw materials, combined with the unparalleled array of educational organizations in America, offer us the possibility to create a Learning Society, in which public, private, and parochial schools; colleges and universities; vocational and technical schools and institutes; libraries; science centers, museums, and other cultural institutions; and corporate training and retraining programs offer opportunities and choices for all to learn throughout life.

The Public's Commitment

Of all the tools at hand, the public's support for education is the most powerful. In a message to a National Academy of Sciences meeting in May, 1982, President Reagan commented on this fact when he said:

"This public awareness—and I hope public action—is long overdue... This country was built on American respect for education... Our challenge now is to create a resurgence of that thirst for education that typifies our nation's history."

The most recent (1982) Gallup Poll of the *Public's Attitudes Toward the Public Schools* strongly supported a theme heard during our hearings: People are steadfast in their belief that education is the major foundation for the future strength of this country. They even considered education more important than developing the best industrial system or the strongest military force, perhaps

because they understood education as the cornerstone of both. They also held that education is "extremely important" to one's future success, and that public education should be the top priority for additional federal funds. Education occupied first place among 12 funding categories considered in the survey—above health care, welfare, and military defense, with 55 per cent selecting public education as one of their first three choices. Very clearly, the public understands the primary importance of education as the foundation for a satisfying life, an enlightened and civil society, a strong economy, and a secure nation.

At the same time, the public has no patience with undemanding and superfluous high-school offerings. In another survey, more than 75 per cent of all those questioned believed every student planning to go to college should take four years of mathematics, English, history/U.S. government, and science, with more than 50 per cent adding two years each of a foreign language and economics or business. The public even supports requiring much of this curriculum for students who do not plan to go to college. These standards far exceed the strictest high-school graduation requirements of any state today, and they also exceed the admission standards of all but a handful of our most selective colleges and universities.

Another dimension of the public's support offers the prospect of constructive reform. The best term to characterize it may simply be the honorable

word "patriotism." Citizens know intuitively what some of the best economists have shown in their research, that education is one of the chief engines of a society's material well-being. They know, too, that education is the common bond of a pluralistic society and helps tie us to other cultures around the globe. Citizens also know in their bones that the safety of the United States depends principally on the wit, skill, and spirit of a self-confident people, today and tomorrow. It is, therefore, essential—especially in a period of long-term decline in educational achievement—for government at all levels to affirm its responsibility for nurturing the nation's intellectual capital.

And perhaps most important, citizens know and believe that the meaning of America to the rest of the world must be something better than it seems to many today. Americans like to think of this nation as the preeminent country for generating the great ideas and material benefits for all mankind. The citizen is dismayed at a steady 15-year decline in industrial productivity, as one great American industry after another falls to world competition. The citizen wants the country to act on the belief, expressed in our hearings and by the large majority in the Gallup Poll, that education should be at the top of the nation's agenda.

Continued in Next Issue

Pacing and Praise

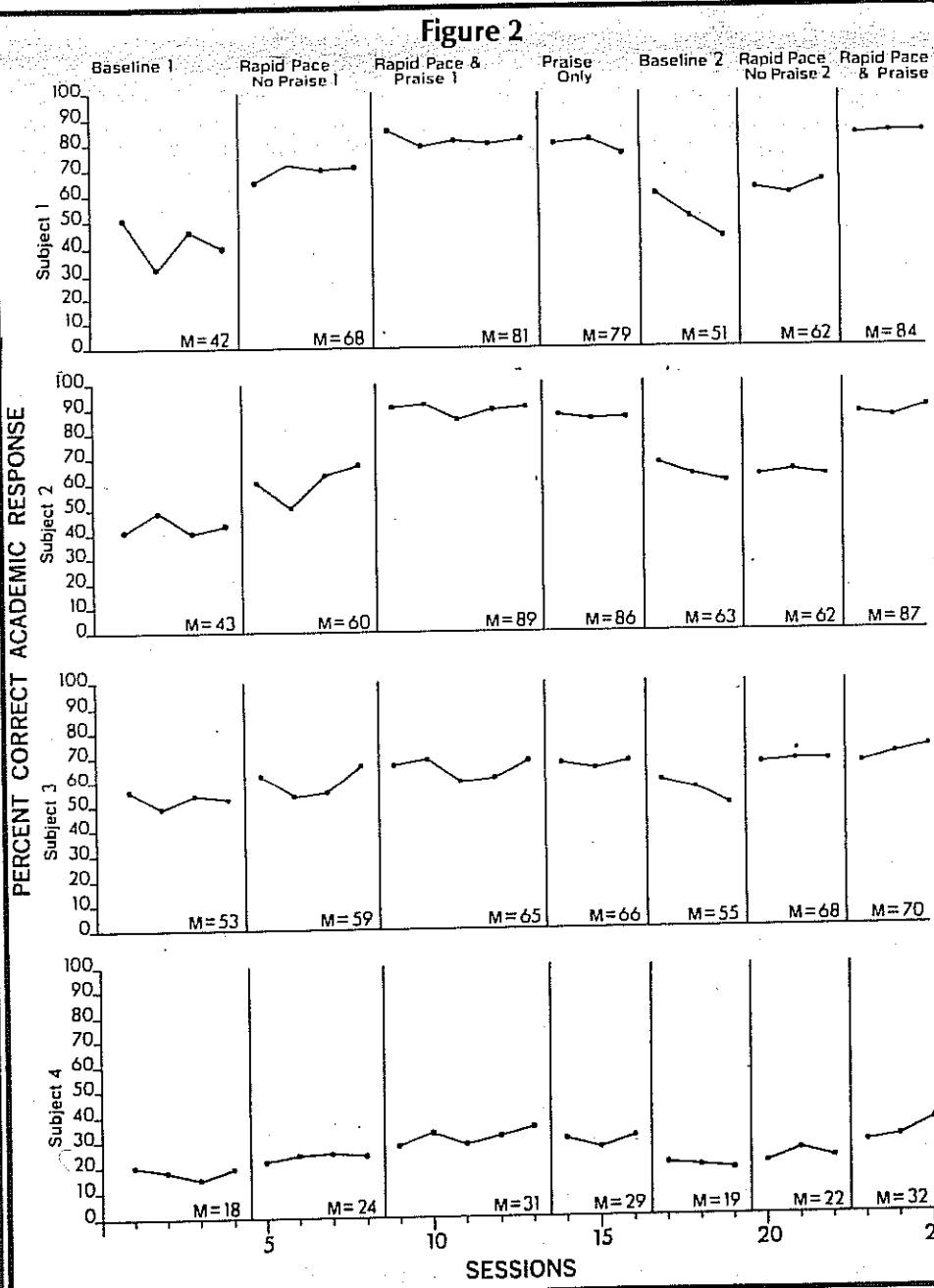
On-Task

The results for On-Task Behavior replicate those for correct Responding. Rapid Pacing and Praise both contributed to increased On-Task Behavior. These findings have implications for teachers whose students have high levels of Off-Task Behavior.

Conclusions

Teachers must look to both instructional modifications and use of consequences when developing instructional programs for skill deficient students. The powerful effects of pacing and praising can be important in allowing students to succeed in the early stages of

Continued on Page 13



performed significantly better on Piaget-Bruner tests. This indicated that they were able to generalize concepts taught through two-dimensional visual materials to three-dimensional concrete objects. They also exhibited superior verbal comprehension, indicating generalization to everyday situations.

Generalization to the tasks on the Stanford-Binet Intelligence Test resulted in a mean gain of 22½ mental age months over the 24 month period, compared with the control groups' mean gain of 7½ mental age months over the same period. This indicated that many of these children, who entered the programme with huge deficits in cognitive skills, were able to exhibit the acquisition of cognitive processes by generalizing their learned intellectual behaviours to new, but related, situations, thus maintaining a near 'normal' rate of cognitive development — skills previously considered unobtainable by such children.

Related studies using Direct Instruction programmes have been conducted with developmentally disabled children by various investigators (Booth et al, 1979; Bracey et al, 1975(a); 1975(b); Clunies-Ross, 1979; Maggs et al, 1980; Maggs & Morath, 1976(a)) over periods of up to five years. The results of these studies indicate similar findings, relating the magnitude of the gains to the time allocated to instruction and the duration of the particular study.

The instructional materials in these studies have been the DISTAR Language 1 & 2, DISTAR Reading 1 & 2, and DISTAR Arithmetic 1 & 2 programmes developed by Siegfried Engelmann and others at the University of Oregon. These programmes were designed to teach basic literacy and numeracy to naive learners. They employ inductive teaching strategies where the general case of concepts and operations is taught through a set of examples culminating in the teaching of rules.

The most recent study (Berryman, Maggs & Parr, in preparation) using Direct Instruction with institutionalized developmentally disabled learners (traditional classification: moderately to severely intellectually handicapped) was conducted at the Lorna Hodgkinson Sunshine Home School in Sydney. In this study, all children aged 6-18 years in the school received Direct Instruction in basic literacy and numeracy over a two-year period. After the 14½ months of instruction, using DISTAR Language, Reading, and Arithmetic programmes, the mean gain in mental age months of a random sample of the subjects (33% of the entire sample) was 19 mental age months as assessed by independent assessors using the Stanford-Binet Intelligence Test. A significant gain in the acquisition of reading, language, and mathematical concepts (intellectual behaviours) was also demonstrated.

The most advanced group of students in this study are now functioning in the high moderately to low mildly intellectually handicapped range and are aged 12-19 years. Several have sensory and/or motor handicaps in addition to their intellectual impairment. They have demonstrated the acquisition of all the intellectual behaviours taught inductively in the DISTAR Language 1 & 2, DISTAR Reading 1 & 2 and DISTAR Arithmetic 1 programmes. Generalization to the items on the Neale Reading Analysis test resulted in mean reading

Table 1 Concepts Taught in the Basic DISTAR Programmes that are prerequisites for Direct Instruction Microcomputing Programme		
Language 1 <i>Description of objects:</i> — identification — prepositions — polars — comparatives — plurals — shape <i>Actions</i> — pronouns — tense <i>Instructional Words</i> — and — same-different — some-all-none — before-after — or — where, who, what, when <i>Classification</i> Class inclusive concepts, operations, and rules	Language 2 <i>Word skills</i> — polars & opposites — synonyms — definitions — superlatives — contractions <i>Sentence skills</i> — questioning skills — statements — verb tense <i>Reasoning skills</i> — analogies — if-then — only — true-false description same-different <i>Classification Direction skills</i> — left-right — from-to — map reading	Arithmetic 1 — recognition and rote counting — matching — counting events & objects — symbol identification & writing — pair relations — addition — algebra addition — subtraction — facts — more or less — written story problems — ordinal counting — figuring out facts — problem solving strategies <hr/> Reading 1 & 2 Decoding Comprehension Spelling

ages as follows: Rate = 8.9 years; Accuracy = 9.2 years; and Comprehension = 9.5 years.

Due to the hierarchical nature of learning where understanding of more complex forms assumes understanding of simpler forms (Engelmann & Carnine, 1982; Gagne, 1977) it becomes possible for non-handicapped learners who have reached this level of basic skill mastery and cognitive development to learn rule-governed behaviour, an essential for higher-order thinking and problem-solving, through deductive instructional techniques (Becker et al, 1975). It also becomes possible for learners who have reached this level to generalize the previously learned concepts, for use as prerequisite skills, to novel advanced learning domains (Gagne, 1977).

Thus, it appears logical to predict that the students in this group, who exhibit these prerequisite behaviours, can now further reduce the gap between 'retarded' and 'normal' functioning by generalizing the concepts already learned through inductive instructional strategies for use in developing advanced rule-governed behaviours in novel learning situations.

In order to investigate this assumption, these adolescents are now receiving Direct Instruction employing deductive instructional techniques, or teaching through rules, in the novel advanced skill area of microcomputing in addition to their normal literacy and numeracy programmes.

Microcomputing was selected as the content area for investigating the applicability of instruction in advanced skills in a novel knowledge area for this population for several reasons:

Firstly, microcomputing by its very nature requires higher-order rule-governed intellectual behaviours and cognitive processes. The computer can only arrive at a conclusion concerning specific problems if the general solutions have already been worked out by the computer programmer and stored in its "memory". It does this by executing the instructions it receives step by step. Thus competence in the ability to iden-

tify a problem, analyse a higher-order problem into its simpler components and arrange the solutions in a sequential manner is essential. Skills in judging the adequacy of data and solution are also necessary.

Secondly, as the students have no prior knowledge of this content area, it can be regarded as novel or 'knowledge free'. An essential for researching the generalization of previously taught basic concepts in one content area to another higher-order learning domain. The specific concepts previously taught that are required as prerequisites for this programme appear in Table 1.

Finally, the impact of the rapid development in power, ability, types and numbers of computers over the last thirty years leaves little doubt that our future will be essentially a technological one. A future in which the computer will play an increasingly important role. Thus, skill competence in this area may possibly widen the life options of these students by opening up new leisure and employment opportunities.

The Direct Instruction Microcomputing Programme

The programme used for these developmentally disabled students is a modified version of a Direct Instruction Microcomputing Programme (Cross, Hermann, and Maggs, in press) developed by a research team at Macquarie University for Year-5 and Year-6 primary school children.

In taking the view that an essential outcome of contemporary education in this technological society ought to be to produce computer literate citizens, the objective of this course in microcomputing is to introduce the students to those skills necessary for the development of computer literacy. Thus it attends to the development of skills in designing and applying microcomputer programmes together with an accurate working knowledge of the capabilities, limitations and applications of computers in the modern society.

As is characteristic of all programmes

developed along the lines of the Direct Instruction paradigm, both thinking operations and content areas are specifically programmed for in this fifty module instructional course. A summary of the specific thinking operations and the modules in which they are taught is shown in Table 2.

The content areas covered are:

- deductive problem solving
- algorithm construction
- structure diagram drawing
- knowledge of computers and computer languages
- computer programme construction in BASIC.

Deductive problem solving skills include defining, identifying, and analysing simple problems and complex problems. The concept that an algorithm is a way of sequentially solving a problem 'step-by-step' is central to this content area. Examples of problems are worked through until algorithms are refined into solutions that are easily written into computer programmes.

These stepwise refinements of algorithms are then represented in structure diagrams ready for writing in the computer language, BASIC.

Instruction in writing programmes in BASIC include the writing of assignment statements, input statements, statements using arithmetic operations, print statements, GO TO, IF... THEN, FOR, NEXT and FOR... NEXT statements.

The specific knowledge about computers includes how they operate, the advantages and disadvantages of computers, and the simpler computer languages.

Teaching Strategies and Lesson Presentation

Each content area is taught in a cumulative manner, where new concepts, rules and principles are built upon previously learned intellectual behaviours. The shift is from simpler forms to more complex forms. In this way memory storage and recall are facilitated as the instructional sequences make the interrelatedness of the con-

Continued on Page 13

Table 2
Programme Tracks for Thinking Operations in
the Direct Instruction Microcomputing Programme

Lesson	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Rules/Definitions	*		*		*		*	*				*	*			*		*			*	*	*		*
Procedures		*	*									*													*
Deductions					*							*													
Basic Evidence					*																				*
Comprehension	*		*	*	*													*	*	*	*				
Applications	*	*		*			*	*	*	*	*	*	*	*	*	*	*	*	*	*		*			
Classifications		*				*				*	*										*				
Description																									

Lesson	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Rules/Definitions	*		*				*	*			*				*		*		*	*	*	*	*	*	*
Procedures	*	*			*	*	*		*	*		*	*		*	*			*	*	*	*	*	*	*
Deductions					*	*	*				*				*		*								*
Basic Evidence						*	*		*					*						*		*	*	*	*
Comprehension	*				*				*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Applications		*			*			*		*		*	*	*	*	*	*	*	*	*	*	*	*	*	*
Classifications																	*								
Description																	*								

cepts, rules and principles explicit to the learners. The objective is to teach the general case.

Each concept is taught through deductive teaching strategies, or teaching through rules. In deductive teaching, a learner is given a definition or rule for a concept, which he then uses to identify the examples of the instances of the concept and distinguish it from other not-instances. This ability to learn to respond through the application of a rule allows the learner to respond effectively in an infinite variety of situations. It is possibly a major factor in advanced intellectual functioning, since one of the major applications of rule learning is its use in problem solving.

To begin with, teaching through rules simply involves giving an alternative name for a concept already mastered, involving the logic of an equivalency rule. (For example: "sequential means one thing following another", Module 5). The learner then repeats the rule verbally to aid retention and works through applications. At the next stage, a rule or definition is given followed by applications involving positive and negative examples using the wording from the rule. Finally, the learner is required to deduce the rule from information presented by recalling previously learned prerequisite concepts and rules, and combining them to arrive at a problem solution. This solution then becomes a higher-order rule, available to the learner to be recombined at any time for use in a flexible variety of problem solving situations.

The 45-minute lessons are presented in two parts. The first part is a highly-structured oral presentation. This is characterized by:

- rapid teacher-directed pacing, requiring a high rate of teacher questioning and pupil responding
- individual and unison group responses, controlled by teacher hand signals
- immediate, academically oriented feedback to students

- extensive coverage of instructional content
- questions at a low to medium cognitive level and academically orientated
- close monitoring of student performance
- sufficient time allocation for instruction
- instruction to mastery.

Research has shown that these aspects of lesson presentation maximize student achievement by increasing the amount of time students spend engaged with the instructional materials (Rosenshine & Berliner, 1978; Rosenshine, 1980). This part of the lesson is taught from carefully scripted teacher presentation materials.

The second part of each lesson, which is characterized by the last six items in the list above, involves independent seatwork, where students work from workbooks.

In the earlier modules, the emphasis is on the oral group sessions. In later modules more time in the lesson is devoted to independent student seatwork. The shift is from — massed practice to distributed practice — overt to covert responses — the teacher as the source of information to the learner as the source of information.

These shifts are designed to aid transfer, retention and rapid learning (Becker & Carnine, 1980).

After 15 weeks of instruction, the developmentally disabled students in this study have been able to exhibit mastery of the content covered in the first 22 modules. They have covered deductive problem solving, algorithm construction, structure diagram drawing and knowledge of computers. They are now about to commence on computer programme construction using the computer language, BASIC. In order to reach this level of microcomputing skill competence, they have had to exhibit advanced, rule-governed behaviours, re-

quiring the generalization of previously learned concepts to the novel learning domain of microcomputing.

Conclusion

The indications are that microcomputing skills are well within the reach of these institutionalized adolescents who were, three years ago, functioning in the severely to moderately intellectually handicapped range. These indications have far-reaching implications for us as special educators: Twenty years ago, it was an accepted 'fact' that people so classified could only be 'trained' in the very basics of self-help skills. Since then, research has shown that such learners can acquire basic intellectual behaviours and cognitive processes through Direct Instruction in the basic school tasks of language, reading and mathematics. Now, as we prepare our clients for an increasingly more active participation in the technological society to which we all belong, can we afford not to consider the place of computer literacy in our curriculum?

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Pacing and Praise
Continued from Page 11

a remedial education program. The finding that rapid pacing alone increases performance might be helpful as a method to eliminate (or reduce), at some point in a student's instructional program, supplemental reinforcement programs (i.e., token systems, high rates of praise). A number of investigators have suggested that use of extrinsic reward systems may produce students who only learn to earn tokens. These students may fail to develop intrinsic motivation for academic tasks. If teachers modify instructional delivery variables (i.e., pacing) some students may not need supplemental reinforcement programs. Further, if a student has already been placed on a point system, an increased instructional pace may facilitate early quick removal of this intervention.

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Inquiry vs. Direction Instruction — Continued from Page 1

All students received the same reading materials, a booklet of 16 legal cases on the constitutional rights of high school students. The cases involved freedom of speech, freedom of the press, personal appearance, sexual discrimination, and disciplinary practices. The cases were written in non-technical language and were reviewed by two third-year law students for validity and accuracy of the summaries. Each student also viewed three filmstrips on *Youth and the Constitution* (Prentice Hall Media, 1976). The filmstrips furnished historical background on the cases covered in the booklet.

Instruction was covered in six one-hour sessions for each treatment. The filmstrips took about 50 minutes, written exercises took two hours and ten minutes, and recitation and discussion the remaining three hours.

Teaching Procedures

The DI and Inquiry treatments differ in four aspects of teacher behavior: (1) structuring, (2) modeling, (3) questioning, and (4) providing feedback.

Structuring. The DI treatment was more structured. The specific concepts to be taught in each DI lesson were prescribed, as were procedures for introducing, illustrating, practicing, and reviewing the concepts. To assure that a logical and efficient structure was followed in the DI treatment, a script was designed following procedures outlined by Carmine and Silbert (1979). The teacher was instructed to depart only minimally from the script to accommodate any unanticipated student responses.

In the Inquiry treatment, "springboard" questions and follow-up probes were suggested for each lesson. Many of the questions were taken from the teacher's guide to *Youth and the Constitution*. (The teacher's guide stated that the program was based explicitly on an "inquiry" format.) No effort was made to specify in detail teacher student interactions. Basically, the structure used in the inquiry treatment followed the Socratic or case study approach to teaching law (Mayer, 1966; Turrow, 1977), though with a greater emphasis on evoking student opinions on the moral and policy issues underlying legal issues.

Modeling. The DI teacher furnished examples of how constitutional principles could be applied in new legal cases. These examples took the form of *stating the issue* in the new case (the concept of "issue" had previously been defined), and *explaining how the principle "covered" the facts* of the case. Students were instructed on how to use this analytic approach during recitation sessions, and they practiced applying the approach on written worksheets.

In the Inquiry treatment, no standard analytic form was demonstrated. To the degree that modeling took place, it centered on the teacher's behavior during discussion. The teacher attempted to model good discussion skills by paraphrasing or amplifying student ideas, asking for clarification, probing for inconsistencies, asking new but related questions, and so forth.

Type of Questions. In DI, about two-thirds of the questions called for a low-inference or factual response on the student's part, e.g., "What First Amendment right did this case deal with, the

Table 1 Summary of Outcome Measures			
Name of Test	Format	Number of Items	Outcomes Assessed
Multiple Choice Test of Legal Concepts and Application	Multiple Choice	18	<ul style="list-style-type: none">• Ability to distinguish among the facts, issue, decision, and rationale in a hypothetical legal case;• Ability to identify the most appropriate formulation of an issue in a case;• Ability to identify the most appropriate rationale for a judicial decision
Essay Test of Concept Applications	Essay	Three questions	<ul style="list-style-type: none">• Ability to formulate decisions in three hypothetical legal cases and justify those decisions in terms of specific constitutional principles
Test of Personal Opinion	Essay	Two questions	<ul style="list-style-type: none">• Ability to express personal opinions on moral and policy issues embedded in the experimental curriculum regardless of knowledge of specific legal principles
Attitude Scale	Likert-type scale	5	<ul style="list-style-type: none">• Attitudes toward the unit and the mode of instruction

right of speech or the right of the press?" No questions were asked in DI that elicited student's personal opinions. In Inquiry, at least two-thirds of all questions required a moderate to high-inference response, e.g., "If you were to challenge a school grooming code in court, which judges would you rather face, the judges in the Olff case or the judges in the Massie case? Why?" or an expression of personal opinion, e.g., "Do you think that students should have the right to wear their hair any length they want?"

Feedback. In DI, feedback was explicit. The teacher deliberately used clear-cut expressions to indicate the correctness or the inadequacy of a student's response, e.g., "Yes, that's right," or "No, that's not what the rule says. Look back at page three and reread the rule."

In Inquiry, feedback was more subtle. The teacher would indirectly, show acceptance of a response by an encouraging remark, e.g., "That's food for thought, Bill. What do you think, Sue?" or by a slow nodding of the head, a smile, or even by silence. When a response was clearly inappropriate, the teacher asked a question to indicate the need for rethinking, e.g., "Given the ruling in the Tinker case, why would you say that?" In no instance did the teacher suggest that a response was correct or incorrect in an absolute sense. In fact, the teacher was instructed not to use the words, "right," "wrong," "yes," or "no" when responding to student ideas or conclusions. It was anticipated that this approach to feedback might impress on students the need to determine independently of the teacher the reasonableness of problem solutions.

Measures

A pretest was used to assess students on the legal knowledge to be taught. With 18 questions, the scores ranged from 0 to 8. The mean was 5.2, suggesting the students did not know the material at pretest. Grade point averages were compared for the two groups. The mean for the DI group was 3.15 and for Inquiry, 2.87. The difference between groups was not significant.

Three measures were designed to evaluate outcomes. A Multiple Choice Test and an Essay test were used to assess knowledge of, and the ability to apply, the legal concepts and principles covered in the curricula. The Multiple Choice test was readministered two weeks later to test retention.

Two additional measures—a Test of Personal Opinion, and an Attitude Scale—were used to evaluate other aspects of the instruction. Tests are described in Table 1. The measures in Table 1 were reviewed by the same law students who evaluated the case summaries. They checked the tests for consistency with the standards of legal scholarship and for their match with the curricula. The law students also scored the tests. The Multiple Choice test had internal consistency reliabilities of .76 for the posttest and .80 for the retention test. Between rater reliability for the Essay Test using a global rating procedure was .68. For the test of Personal Opinion, the rater reliability was .76.

Results

The two treatment procedures were first evaluated for fidelity of treatment procedures. Taped transcripts of 5 lessons from each treatment were evaluated to see if the treatments planned were actually implemented. The focus was on the teacher-directed part of

the instruction, rather than the filmstrips or seatwork. The ratings of treatment fidelity showed (as planned) that 65% of the DI teacher's questions were in the factual or low-inference category, while 82% of the Inquiry teacher's questions required moderate to high-inference. The expression of personal opinion. The DI students received 185 instances of clear-cut feedback while the Inquiry students received 11 such instances.

The main results are presented in Table 2. On the Multiple Choice test, the DI group performed significantly higher on both the posttest and the retention test than the Inquiry group ($p = .05$). The magnitude of the difference was .75 standard deviation units in each case. This is considered a sizable difference.

On the Legal Essay, the DI student also performed significantly better ($p = .05$). The magnitude of the difference was again sizable at .75 standard deviation units.

The analysis of the Personal Opinion Essay (using grade point average as covariate) showed the Inquiry student scoring higher than the DI students ($p = .01$).*

Table 3 shows the results for the attitude measures. The Inquiry student scored significantly higher on one item "The material was challenging." The other items showed more positive attitudes for DI students, but difference were not significant.

Discussion

The findings show that DI can be used to teach complex concepts and skills at the secondary level. DI students performed significantly better on both knowledge measures and retained this knowledge over a two-week period.

The Inquiry approach led to a more elaborate expression of personal opinion (Test of Personal Opinion). This is likely due to the fact that these students had more practice expressing their opinions, rather than because such expression is unique to the Inquiry method. The fact that the Inquiry students regarded the material as more challenging is consistent with the claims of Inquiry proponents (e.g., Bruner, 1976). It is probably also true that for some students the line between being challenged and being confused is difficult to draw. Several of the students in the Inquiry treatment told the teacher that they found the teaching "interesting," but "hard to follow." It appeared that some students had very little idea of how to respond to the difficult questions posed in the inquiry treatment, as the following excerpt from a taped lesson illustrates (T = teacher; S = student):

Table 2 Means and Standard Deviations of Outcomes Measures

Outcome Measures	Instructional Methods			
	Direct Instruction (N = 15)		Inquiry (N = 15)	
	M	SD	M	SD
Multiple Choice				
Posttest ¹	13.27*	2.63	10.73	4.27
Retention ¹	12.53*	2.88	10.13	3.93
Legal Essay ²	3.48	.81	2.93	.58
Personal Opinion Essay ²	3.54	.72	4.17	.94

¹Range: 0 to 18 * $p = .05$
²Range: 1 to 7

Table 3 Student Attitudes Toward the Unit

		Direct Instruction (N = 15)	Inquiry (N = 15)	P
1. I learned a lot in this unit.	Mean SD	3.23 .49	3.13 .35	n.s.
2. I feel that the legal concepts and principles we studied are important to know about.	Mean SD	3.33 .49	3.03 .30	.10
3. I liked the way the unit was taught.	Mean SD	3.00 .65	3.07 1.28	n.s.
4. I wish more units in social studies were taught this way.	Mean SD	3.00 .93	2.70 .80	n.s.
5. The material was challenging.	Mean SD	3.03 .61	3.67 .49	.01

Note: Scores are on a 4-point scale, ranging from Strongly Disagree (1) to Strongly Agree (4).

- T: In the Tinker case the judges formulated a general rule or principle. What do you think this was?
- S3: Non-violence. If it's non-violent, it's okay.
- S1: Like a long time ago, like, or in the 1960's, Martin Luther King was non-violent, it was all non-violent, and it was okay...
- T: What makes that a general principle or rule?
- S2: Violence doesn't pay.
- T: What I mean is not why you should believe it or not believe it, or accept it or not accept it. But how do you know that what you just said is an example of a general principle or rule?
- S2: Well, if students are having a demonstration, and there's an uprising or a big disruption that causes harm—usually to someone or something—it damages someone or something or a group of people and...
- T: What's the definition of a principle or rule?
- S1: ... a rule that says what's right and what's wrong.
- S2: A standard you have to live by.
- T: Then tell me why what Joe is saying represents a rule or principle. Not whether or not you like it or think it's good, or whether you should obey it or not, but why does it represent a principle or rule?
- S1: Because it's protection for the people.
- T: If I built a big shelter for people, that protected people, would the shelter be a principle or rule?
- S1: No.
- T: Why not?
- S1: Because it's a shelter constructed, but it doesn't have something to enforce it and to back it...

Inquiry teaching may require a much longer period of time to produce desired outcomes than DI. Personal accounts of first year law students, for example, often indicate that they are confused and frustrated by the Socratic teaching method during the first few months of the term, only to emerge as strong advocates of the method by the

end of the year (Turow, 1977). It may be that Inquiry teaching cannot be operationalized effectively in a six hour treatment condition.

In addition to the time factor, student characteristics may affect what is learned under Inquiry condition. Law students obviously have a more extensive academic background than high school students, which no doubt helps them to organize issues and arguments when no organizing structures are provided to them. Insofar as there are distinctive payoffs to Inquiry instruction, they may be limited to those who already possess the basic concepts and skills in the area being studied.

Our observations of the experimental treatments suggest that the main value of DI lay in the early phases of the treatment, which focused on the acquisition and application of basic legal concepts, e.g., fact, issue, decision, rule or principle. These concepts provided a common framework with which to analyze new legal cases, and to compare them with cases studied earlier. The Inquiry treatment students generally did not develop this common framework. The analysis of cases seemed less focused and less productive in this treatment. It may be that inquiry teaching is best used in combination with more structured approaches, at least in content areas that are new to students.

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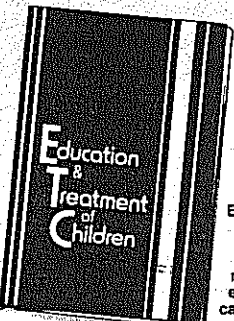
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Administrators Briefing

Continued from Page 7

release them for training, so it took longer and created lost instructional time for the children. This remains the most difficult problem for the on-going training of teachers, but there is a much more cooperative attitude in the district now toward training and supervision of teaching than was present initially.

A critical problem for me personally has been to develop the time-management skills to make supervision of Direct Instruction my first priority given all the other things on my agenda. I have not had the luxury of delegating Direct Instruction supervision to trained people, although many teachers are quite capable of carrying out the programs successfully.

A continuing problem is the lack of resolve in this district to do serious program implementation by providing the needed resources to train teachers and test program effectiveness. At the same time, there is a continuing fascination with instructional fads and a consequent

loss of district resources (money and staff time) to programs that have neither a logical nor empirical chance of working with "hard to teach" children. I continue to entertain the hope, nonetheless, that determined principals, teachers, and parents, who recognize worthy instructional programs when they see them, can overcome the many forms of resistance they will encounter and insist that the education we provide for our children is the very best that is available. Only through a commitment like this can we lessen the risk for children who are at risk for educational failure.

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Oregon Gets Leadership Training Grants in Special Ed

by Douglas Carnine

Special education at the University of Oregon has recently received several grants for training special educators. Two of the grants are in the mildly handicapped area, focusing on the preparation of leadership personnel at the doctoral level as well as teachers of handicapped students. The three-year leadership training grant increases the likelihood of financial aide for entering Ph.D. students.

The Ph.D. Leadership Training grant proposes to develop leaders in special education who are experts in providing concrete, specific solutions to the problems encountered in classrooms serving handicapped students, in training teachers of the handicapped, and in designing research on instructional procedures for the handicapped. In addition, the program will aim to foster a sense of professionalism in the doctoral students. This grows from an understanding of issues that go beyond instruction (including interpersonal communication, scholarship and research, skills in writing, and the like). What is unique about this problem is that while students pursue these areas of professional development, the link between these areas and instructional issues will be explicitly and implicitly addressed by the faculty. Our goal is that students will utilize their core knowledge of instructional design and effective teaching to develop a basis for their research projects, and/or curriculum development projects for handicapped students in

areas such as computer-assisted instruction, science curriculum, inservice projects, work on legal issues, interactions with parents and consumer advocacy groups, and the like.

All candidates for the program will have to be reasonably proficient teachers. If they are not, they will be assigned to practice in teaching until they meet specific performance criteria.

Candidates would supervise in the Handicapped Learner Norm practice. This program phases master's level students into increasingly more difficult or technically demanding teaching situations, with a one year daily practicum experience.

Just as the trainees in the Handicapped Learner Norm program begin with "basic" teaching assignments and are then phased into more difficult situations, the Ph.D. special education candidates would be phased into increasingly demanding training situations. At first, they would accompany an experienced trainer who has demonstrated extreme proficiency in teaching all types of handicapped children and training student-teachers.

During the first few weeks the experienced trainer performs all necessary "interventions" (taking over a group and demonstrating how to solve a serious problem that the trainee is experiencing), gives all assignments to the trainee, arranges schedules for monitoring, and deals with interpersonal problems. When the candidate exhibits high reliability in observing prob-

lems and in describing what would constitute an effective remedy, the candidate is given increasing responsibilities for the supervision until the candidate becomes the primary supervisor of a group of Handicapped Learner Norm trainees, with the supervisor now serving the role of back-up and facilitator. This careful progression from supervisor in training to "main line" supervisor is the foundation from which the students will come to be experts in providing quality service to handicapped students. While the core-part of the program is not the only aspect of the proposed program that directly relates to the educational needs of handicapped individuals, it is the major part.

Successful teacher trainers are the key to successful implementation of programs for the handicapped. But they do not grow on trees. They must first be excellent teachers, measured by their ability to teach any child (from the highly noncompliant to the seriously language-delayed) in any situation. They must be able to provide immediate solutions to problems that the teachers or trainees are incapable of solving. They must understand the nature of the practice required for different skills, how to "diagnose the instruction" that the teacher is providing, and, based on observed flaws in the instruction, predict specific student outcomes. They must be able to communicate the relationship between the observed flaw in the procedures and the predicted outcome, and they must be able to demonstrate that the problem is soluble by changing the procedure, so that the flaw has been eliminated. In addition, they must have skills associated with appropriate scheduling of activities within the classroom, scheduling their time so they observe teachers or trainees at times that are most likely to reveal specific problems (such as transitional activities in the classroom) and deal with a full range of administrative and interpersonal problems in a way that is both time efficient and effective in solving the problems. They must be able to communicate effectively with trainees, teachers, school administrators, and parents. This includes the ability to write clearly and effectively about

educational issues, and to make presentations at professional conference teacher training sessions, meetings parent groups, and meetings with administrators.

Finally, they will need the expert and scholarship required to conduct research that is relevant to the technology of improving teacher performance, program-design, student performance, and support systems.

Individual programs of doctoral students will be planned by students with the help of a three-member faculty Program Advisory Committee. Although program will be planned to meet the individual needs of each student, an integrated plan of coursework will be followed by students in the leadership preparatory program.

By the end of the first term, each individual must: (a) nominate an advisor committee of at least three faculty and (b) develop and plan a timeline to guide his/her efforts to meet all required competencies, write comprehensive exams and complete a dissertation. The timeline will be developed in conjunction with the program committee. On purpose of the committee is to indicate all available resources in the University community in planning of the program of studies. This group will be charged with the responsibility of reviewing and approving the student's doctoral plan and amendments of that plan, and of reviewing program task products designated for review by the Program Committee. This committee also prepares and evaluates the comprehensive exam and monitors the student's progress until the degree is obtained. Progress is defined according to completion of seven major competencies: presenting course lectures, teaching a course, supervising, conducting inservices, writing a grant proposal, conducting research, writing an issues paper, and participating in University governance. The competency structure substitutes for long lists of required courses. The program culminates in the dissertation. For more information, write Doug Carnine, SpEd, Teacher Education, College of Education, Eugene, OR 97403.

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