Mild Learning Difficulties

Corrective Reading Tested in U.K.

By Pauline Holdsworth
Deputy Headteacher, Mowbray School
North Yorkshire, U.K.

Mowbray School was built to cater to children with a wide range of special educational needs. Its design and organization reflect many of the recommendations made in the Warnock Report. This article is concerned with the progress of one group of children with mild learning difficulties over the period of a year, and the experiences of the teacher, following the introduction of a Direct Instruction programme.

The Mild Learning Difficulty Group

Children with mild learning difficulties are identified by the Special Educational Advisory and School Psychological Services. A panel, including the deputy headteacher, selects children for placement in one of two special groups in the school. All the children fall in the average or above average ability range and most have had remedial help in their own schools, but have either failed to learn to read or at best made very slow progress. Many of the children are described as being very anxious, having a short attention span, poor memory and reversal problems. The children are usually of junior school age, although senior pupils have also joined the group; sometimes on a part-time basis. These children are offered a short term placement of two or three terms duration and follow a restricted curriculum biased towards literacy and numeracy. The children return to their own schools for the last week of every term so that contact is maintained with friends and teachers.

In Search of a Programme

Initially the children worked on individual programmes using eclectic methods. The burden upon the teacher was tremendous as an attempt to prepare and sequence appropriate material for every child was undertaken. The restricted curriculum ensured that more time was spent on literacy skills competency and therefore progress was made.

Nevertheless a more highly structured programme was sought that would accelerate learning, thus making short-term placement feasible. Some objective measure was also needed to aid the selection of children for the groups. One means of predicting the intervention period required by each child was also highly desirable to assist in forward planning. The importance of using new materials and methods with children who have experienced failure is well-documented and was therefore taken into consideration.

Introduction to a Direct Instruction Programme

The introduction of a Direct Instruction programme - Corrective Reading - was suggested by the second deputy headteacher. After a visit to a school using a similar programme, it was felt that this method and material warranted closer examination.

The Corrective Reading Programme is certainly very highly structured and research in the USA and Australia supports its claim to accelerate learning. A placement test is available which allows homogenous teaching groups to be selected. The programme is divided into three levels with a stated number of lessons, and therefore it is possible to estimate the time span needed for a group to complete each level. The teaching method is by direct instruction with the teacher using a script and the children responding, as a group, on signal. The pupils are unlike any other remedial books in that they have no illustrations, and at the first level they are essentially wordless. This programme certainly seemed to satisfy our requirements. Eventually, it was decided to run the programme as an experiment and attempt an evaluation.

Running the Programme

A group of children were selected by use of the placement test to start at Mowbray on level B of the decoding programme in September. The group consisted of seven children of age 9 to 11, plus three older pupils who attended part-time and were not really part of the experiment. One boy placed at level A

Continued on Page 4

Should Principals participate in Staff's Development?

By Meredith Gall, Glen Fielding, Del Schloock, W.W. Charters, Jr., and Jerry Wilczynski
University of Oregon

Many principals believe that their leadership styles are critical to teachers’ classroom door. For them, the quality of classroom instruction is the teachers’ domain. Recent research on effective schools has called into question this “hands-off” approach to instruction. Schools in which students make greater-than-expected achievement gains with schools in which students make less-than-expected achievement gains. These contrasts revealed that the instructional and leadership styles of the school were better able to have principals who acted as the instructional leader for their teachers. How was the principals’ instructional leadership manifested? Leithwood and Montgomery (1983) reviewed the available research studies to answer this question. They found many manifestations of instructional leadership by principals, including the practice of taking an active role in teachers’ staff development.

This finding about instructional leadership seems plausible. Because the research studies were correlational, however, they could not determine whether the principals’ involvement in teachers’ staff development was an actual determinant of a school’s instructional quality. A controlled experiment is necessary to demonstrate causality.

We did such an experiment, and the following is a brief report of its method and findings. (Readers interested in more detail can read the technical report by Gall, et al., 1984).

The Staff Development Program

We decided to use the staff development program called Active Mathematics Teaching (Gall, Grows, and Embleton, 1983) as the basis of our experiment. The program trains teachers in the instructional model shown in Table 1. In effect, the model constitutes a daily lesson plan for the teachers.

You will note that the Active Mathematics Teaching instructional model is similar to the Direct Instruction Model for Follow Through (described in Paine, et al., 1983, p. 8). Both models emphasize academic objectives, structure the use of time, use efficient, standardized teaching/management strategies, and provide for frequent monitoring of student progress.

This experiment seeks to determine whether involving the principal in the Active Mathematics Teaching staff development program would enhance its effectiveness. All of the fourth- and fifth-grade teachers in the 15 schools agreed to participate in the experiment. Six of the schools were in two small farming communities with some light industry. The other schools were located in a suburban community adjacent to a large metropolitan area.

The fifteen schools were assigned as randomly as possible to three treatment groups. Principals and teachers of the five control schools did not participate in the program. Teachers in the five regular inservice schools participated in the program, but their participation was non-involvement. Participation involved attending two three-hour staff development sessions and reading a teacher's manual.

Teachers in the five principal involvement schools participated in the same training as the regular inservice teachers, but in addition their building principal attended the sessions and read the manual. Furthermore, the five principals engaged in other activities designed to increase their instructional leadership. They conducted several cycles of clinical supervi
Dear Mr. Engleman et al.,

This letter should have been written some time ago. We wanted to thank you for teaching our son to read in 100 easy lessons. As you can guess, we picked up a copy of Teach Your Child to Read in 100 Easy Lessons at the local book store. Our son, Josh, who is currently six, had recently shown a strong interest to read. We are both teachers and were never concerned at what point he would express interest. In fact, Josh is enrolled in a private school that does not emphasize systematic reading instruction until grade 2.

Now, he had been mildly interested in reading at age 4 and again at age 5. At those times we experimented with reading lists from the Montessori and Sullivan Reading Programs. He would quickly lose interest after a few sessions and we did not press forward. Then we saw an ad in the local newspaper for “Teach Your Child … and we went wild. We both recognize the DISTAR method but were not interested in using a year-long program even though we could have bought the system from a local school. One hundred days seemed just right. And, it was! Josh began the program at the end of May and completed it in August (a few days before first grade was to begin). It was wonderful watching a “normal” learner diligently become first a beginning reader and then a confident second grade reader by summer’s end. By the way, we are both special education teachers so our faith in DJT use with normal learners was doubly reinforced. There were a few rough spots when the lessons got longer. We went to a penny reinforcement system and interest sparked up immediately. Four months later (December) our son is a confident reader who breezes his way through second grade books. His reading comprehension was nearly 100% and my wife had to construct new questions to make it more difficult and more interesting for him. Teaching reading has never been so much fun for us and we thank you for this wonderful gift.

Lovingly,
Gary and Phyllis Ruskin
P.S. Don’t you think it’s time for a math book?
P.P.S. Please let us know when our DJT probation runs out so we can renew.
*12/2/84
Wood-Johnson-Johnson Psycho Educational Battery Reading Cluster Scores Grade Score 2.3, Percentile Rank 88%
Current Grade Level: 1.4

To the ADI Board of Directors:
Paul and I were pleased and surprised to be chosen for DJT excellence award. When Bryan Wickman called and said, “Congratulations, you have just won…” I almost began to giggle because I thought it was two free tickets to Arthur Murray Dance Studios. But, thank goodness, it wasn’t that.
It was, and is, in fact, a tremendous honor to receive these awards because the people who make that decision are very highly respected in their own professional field to educational change for excellence. They, as we still do, suffer much under the burdens of threatening mediocrity. However, these awards belong to those teachers and principals in the field who are not perfect, who take their jobs seriously and care about kids and learning. Every signature on the letter which nominated me belongs to a true professional who has stood up for DJT. I am so proud to work with them.

Paul’s preschool program continues to be the best in the State of Alabama. His teachers are credited for their dedication and the success it has produced. If administrators and teachers would clearly and unequivocally opt for excellence, they could make kids that smart, too. So, thanks again to all of you. The award will be the link that connects us to some really great folks all over the world!

Robert S. Weisberg
Compensatory Program Coordinator
Tuscaloosa City Schools

Paul Weisberg, Director
Early Childhood Day Care Center
and Professor of Psychology

Dear Editors:
As teachers we’ve always had enough paperwork to keep idle hands busy, now we’re getting help with more paperwork. It’s not enough to have daily grading, roll check, lunch count, schedules, lesson plans, register, notes home, three weeks report, six weeks report cards, curriculum revisions, midterm report, and on and on — now we have the legislators of Texas giving us more.

Dr. Hicks, professor at the University of Texas at Tyler, remarked at our first meeting concerning the attrition rate of new teachers that many first year teachers simply throw up their hands and quit. This is due in large part to the mountains of paperwork required of each of them and the importance placed on each article of that paperwork. This adds greatly to an already stressful situation and represses the steady-state stress-pattern-stress cycle.

When, at the end of a blissfully peaceful teaching day, the principal sends the teacher to an auditorium to accept a teacher to sit down to calmly, and carefully plan for the next day, what must she write the E.E.S. (essential elements for each objective, keeping in mind the newly set time requirements for each subject per day, or per week. This naturally takes time, which is at a premium anyway.

All the plans which she has so painstakingly written are subject to approval and acceptance by her principal, supervisor, superintendent, and finally to the school board — leader of responsibility to and for the work of the poor paper laden teacher. Also, from the State Board of Education of Texas has come the career ladder to decide the pay level of each individual teacher. The decision to move up this ladder also includes more paperwork.

If you “only teach” there is more than enough stress-paperwork-stress. If you desire to receive any pay raises or recognition for your work there is more paperwork.

What I’d like to find out as a stressed-out teacher is how to move the career ladder is just how to fit all the paperwork into the day and how to find time to teach the magnificent and E.E.S. to the quiet, still, adoring little darlings all this is supposed to help educate? Suggestions will be appreciated.

Linda Gallin
Resource Teacher
Gladeview ISD, Texas

Nominations Open for 1985 ADI Excellence Awards

Nominations are now open for the 1985 ADI Awards for Excellence in Education. Each year, ADI recognizes several individuals who have distinguished themselves by their commitment to excellence for all students through the technology of direct instruction. Since the awards were inaugurated in 1982, they have been given in three categories — teaching, elementary and/or secondary, administration/supervision, and teacher training/research.

We invite nominations in these categories again for 1985 awards. In addition, we would like to encourage you to nominate people who, through direct instruction, have shown exemplary commitment to the education of all children — regardless of their job title or position.

It seems that people who advocate for students through direct instruction play different roles in different school systems. Often they are teachers, superintendents, or principals. In other cases, they may be school psychologists, counselors, or special education teachers. In some cases, they may be members, etc. No role has a corner on the student advocacy market. Thus, we plan to accept nominations for an ‘open category’ (in addition to our previous categories) in the 1985 ADI awards competition. If you know of someone who has been a long-time ardent supporter of students through direct instruction, please consider nominating them for an ADI award, regardless of their position or title.

Nominations should be made through a letter submitted to the ADI Board of Directors by June 15, 1985. The letter may be signed by more than one person, and you may enclose any supporting documentation which you feel would add to your nomination. Send materials to:

Association for Direct Instruction
1985 Awards Committee
P.O. Box 10352
Eugene, OR 97440

—Deborah M. Page

References


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Continued from Page 5

The Direct Instruction News is published Fall, Winter, Spring and Summer, and is distributed by mail to members of the Association for Direct Instruction. Readers are invited to submit an article for publication relating to DI. Send contributions to: The Association for Direct Instruction, P.O. Box 10252, Eugene, Oregon 97440.

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Video Disk Instruction

by Douglas Carnine
Siegfried Engelmann
Van Houdemacker

One of the most potent technologies available to educators is the video disk. Each side of a laser disk can project images onto a conventional still frame screen, making it the world's most efficient slide projector. If the frames are presented quickly, motion sequences are produced. The teacher can play the disk forward and backward at different speeds, freeze the action for a moment while making a comment, or leave the image on the screen for the entire period. If a different portion of the disk is needed for discussion, the disk player can jump to another portion of the disk in a few seconds. The ability to quickly change from place to place is called random access. Moving from place to place on video disks is often as fast as making a flip of a page.

The potential of video disk instruction is limited only by the dynamics of the video disk itself. If a video disk is free of spatial and temporal distortion, and the design of a mastery learning classroom incorporates video disks into the lesson plan, then the potential of video disk instruction can include drill and practice, tutorials, and simulations.

Prevalence of Video Disk Technology

For all the advantages of the video disk, the technology is only slowly beginning to appear in schools. Stereotypes about home video, the technology of the disk itself, and the cost of the technology all contribute to a slow adoption rate. Each example of the potential of video disk technology presages the coming revolution. In the future, video disks will be as common in schools as text books are today.

The teacher must maintain a central role in the instructional process, deciding when to review important concepts, elaborate on a particular point, or expand on the context of the course. The teacher's role is to provide guidance and feedback, to monitor progress, and to adjust the instruction to meet the needs of individual students.

One way to achieve this is through the use of video disks. A video disk can be used to present the material in a variety of ways: as a lecture, a demonstration, a simulation, or as a series of questions and answers. The teacher can control the pace of the presentation, and can adjust the difficulty of the questions to meet the needs of individual students.

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initially, transferred into this group after missing the first few weeks of teaching. One girl from a moderate-learning group was also transferred.

During the summer holidays a small group of teachers was given a short training session to enable them to take the teaching program in September. (The teachers' lack of experience with this method of teaching must be taken into account when the results are examined.) The group was taught throughout the week by three different teachers, but his did not appear to affect the group adversely.

At the first programme was taught once per day, but later in the term, as the teachers and children became more accustomed to the format and pacing of the lessons, two lessons were often covered. A review of the progress made over the term and graphs were utilized to show the group the staff to increase the sessions per week from five to nine after Christmas.

Parental Involvement

The school aims to develop a mutually supportive relationship with parents at every level. Their interest and help are extremely important if the programme is to continue. Parents were very anxious and willing to do all they could to help their child.

A series of workshops was devised and run for parents of children in the group. The first session introduced the programme to the parents and gave them an opportunity to discuss problems and difficulties. The parents were then given an opportunity to discuss the programme and to ask any questions they had. The parents were then given an opportunity to discuss the programme and to ask any questions they had.

Reactions of Children and Parents

In September the teacher explained to the group that a method was to be used which was new to them and that they would be expected to show their children help would be needed. They responded magnificently and the reading sessions were thoroughly enjoyable. The children felt that their reading was better after only a few weeks and they certainly were more interested in reading material as a whole. It was noticed that when letters were distributed to be taken home the group attempted to read the letter. At the end of the first term many of the children wanted to read at Mowbray and "continue learning" instead of just painting and singing. One child refused an invitation to join her class on a field trip as she was keen to keep her work. The children certainly seemed aware of and involved in the group's progress and were more confident.

Several parents made similar observations, stating that their children had "bloomed" and that other people had noticed this as well. Many of the children were seeking opportunities to read a variety of printed matter —

television programmes, sign posts, and books. After Christmas the parents of one boy described the delight of all the family as they drove through the countryside to join his cousins in reading the tags on the Christmas parcels to be distributed by the school. Another parent reported her son's pride in being able to read fairy stories to a younger cousin. In general parents observed the children reading more as a chosen activity as the programme progressed and commented that books bought several years ago were now being devoured.

Initial Reservations and Revelations

Although the programme seemed to satisfy the criteria identified by the teacher, it was not endorsed without reservation. Many of the initial apprehensions were due to a simplistic view of the design of the programme and disappeared as the teacher gained knowledge of the programme and received daily feedback from the group.

1. The sessions appeared very teacher directed and it was feared that only rote-learning would take place. In actual fact basic rules were taught which could be generalized and therefore the children were given independent work.

2. The scripting appeared to be very constructive and机械istic. However once the teacher and group were familiar with procedures if freed to read the teacher to children's learning. The high level of the teacher's contact with the book club attracted a growing number of customers as the programme ran on.

3. It is an American programme and it was thought that the Americanisation and cultural bias would be outside the experience of the group. It was found that the influence of American television programmes was very slight and the language more adaptable to the children than to the teachers. It was also made clear to all teachers that the reading material as teachers searched the text for clues to illuminate unfamiliar words and phrases.

4. The emphasis upon decoding made the teacher concerned that the child would not keep pace with decoding skills and the child would be left behind at this stage. This was not found to be the case and gains in comprehension have been made with all children

5. The sessions are very intense and it was impossible to predict if this group of children could work in this way, especially as many were described as having a very short attention span, and the programme required full attention for a period of approximately 45 minutes. In practice no child was unable to attend as required. The essential rapid pacing and pupil-teacher interactions were very motivating and tended to hold the attention of the group.

Results After Two Terms

It was possible to monitor progress daily as each child met the criteria for the programme, but it was felt necessary to use a norm-referenced test which would be more meaningful to the children's own schools to measure progress. The group was tested, either by the headteacher of Mowbray or an educational psychologist. On November 1, Neale's Analysis of Reading Form A was used and on March 1 Form B was used. See Figure 1.

Pupil 2 was from the moderate learning group. Her parents checked her reading, but did not use the programme. Pupil 9 likewise had little parental help and a number of prolonged absences. The other children had quite consistent support from parents or, in the case of a child from a one-parent family, from grandparents. Pupil 4 joined the group at session 35 after making excellent progress in level A.

The gains were certainly very interesting and although test results are not infallible they did seem to support the view that the children were making rapid progress in reading accuracy and also significant gains in comprehension. The improved quality of pupil 3's reading is impossible to capture in a reading accuracy score, but the comprehension gain gives some indication of this. At a less dramatic level pupil 2's increased fluency of reading certainly added to her comprehension.

These results along with daily observed behaviour in reading sessions, parents reports and the children's growing enthusiasm for reading convinced the staff that this had been a worthwhile exercise. It is interesting to note that the book club attracted a growing number of customers as the programme ran on. A fortnight before Easter a meeting was held at Mowbray to explain to the teachers in the feeder schools what had been taught and the method used. Teachers were given an opportunity to examine the material and to see extracts from a lesson on video.

An information sheet was prepared to show what had been covered in the programme and what still needed to be taught. A list of available materials was also distributed. It was then arranged that the remedial teacher would make visits in the next term and one visit in the term following to teach the children how to help their teachers and meet the parent group.

At the final parents' evening, the children's visits to each school and parents were spoken about in turn. The visits to each school were made to ensure that the children had had sufficient opportunity to examine the material and to see extracts from a lesson on video.

A Mini-Experience with Corrective Reading Decoding C

A small scale experiment was run in one of the primary schools in the summer term for approximately two and a half months.

The Target Group

The group consisted of six children aged between 10-12 years. Pupils 4 and 5 (see Figure 2) had successfully completed the Corrective Reading Program D at Mowbray and before Easter Pupil 3 had made so much progress that he was included in the experiment group. Pupils 4 had covered only half of D at Mowbray, Pupil 3 had covered the programme at Mowbray, but, partly due to minor absences, had not completed the programme. The group was selected as an interesting group to join the group.
Three other children from the primary school were tested using Neale's Analysis of Reading and the placement test. The two chosen to join the group seemed marginally in need of more help. All were retested at the end of the term.

Teaching Arrangements

The teacher's manual recommends that one lesson should be presented every day. It was not feasible to do this as only two mornings were available to the teacher for this purpose. The programme was therefore taught twice per week, but two or sometimes three lessons were covered.

The group prepared for each session by pre-reading the stories at home and also completing some of the written comprehension questions. The first 30 lessons were taught in sequence, then some lessons were 'skipped' in order to cover as many new teaching points as possible. Thus, the lesson presentations were less than ideal. Nevertheless the results indicate the power of the programme.

Parental Involvement

Parents were invited to a meeting and the experiment was explained to them. New parents were introduced to precision teaching. Probe sheets and ratio graphs were again utilized.

Results for Experimental Group

The results are interesting, although the sample is small and the time span too short to be a good test. However, the gains recorded by the five children correctly placed in the programme are very encouraging, especially as these results are found both in reading accuracy and comprehension.

The loss shown by pupil 6 who did not meet the original criteria for this level emphasizes the need for the placement requirements to be observed. This child's difficulty was probably exacerbated by the unusual pacing of the programme and a spottiness of absences.

Results for Children Returned to Their Own Schools

Five of the children in the first Decoding B group returned to a normal primary programme with some modification depending upon the resources of the school. As noted earlier, two liaison visits were made to each school. Most of the parents continued using the precision teaching method with readers from the child's school.

The results were very uneven. The consistent gains made earlier were not found. (See Figure 3)

Staff and parents, however, reported that the children were choosing to read more frequently. All schools felt that the children were able to enter more fully into their classroom activities.

The Way Forward

A comparison of the results tends to suggest that it would be in the best interest of the children if they could have also been taught Decoding C. Mowbray School is at present unable to extend a placement for this purpose.

This final stage should preferably be taught in their primary school so that they could enjoy the benefits of the programme and the wider curriculum available at the same time.

A weekend course was run at Mowbray School in order to train interested teachers in Direct Instruction and precision teaching. The course was well received and it is envisaged that another one may be run next summer. It is hoped that more teachers may adopt this method as a means of accelerating the learning of slower children in the ordinary school. The search for alternative and more effective means of supporting children on their return to the ordinary school will continue.

This year has been an exciting one for the teacher and the children. The children's enthusiasm and growing confidence was very encouraging to the teacher. Overcoming learning difficulties certainly became a joint task. This past year has been an exciting one for the teacher and the children. The children's enthusiasm and growing confidence was very encouraging to the teacher.

It is hoped that the trend discernible in this small scale evaluation of a direct instruction programme will inspire other teachers of children with learning difficulties, in all types of educational establishment, to explore the Direct Instruction Model.

References

Place of use: A Pre-test of Neale Analysis of Reading Ability Form B

![Figure 3](image)

Results for Children Returned to Their Own Schools

The atmosphere of the group was mutually supportive and dispelled fears of a sterile, mechanistic teaching environment.

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Results for Children Returned to Their Own Schools

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Table 1

<table>
<thead>
<tr>
<th>Good and Grouws’ Techniques for Mathematics Instruction in Elementary School</th>
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<tbody>
<tr>
<td>Daily Review (first 8 minutes except Mondays)</td>
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<tr>
<td>a. Review the concepts and skills associated with the homework.</td>
</tr>
<tr>
<td>b. Collect and deal with homework assignments.</td>
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<tr>
<td>c. Ask several mental computation exercises.</td>
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<tr>
<td>Development (about 20 minutes)</td>
</tr>
<tr>
<td>a. Briefly focus on prerequisite skills and concepts.</td>
</tr>
<tr>
<td>b. Focus on meaning and promoting student understanding by using lively explanations, demonstrations, process explanations, illustrations, etc.</td>
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<tr>
<td>c. Assess students’ understanding:</td>
</tr>
<tr>
<td>1. Using process/product questions (active interaction)</td>
</tr>
<tr>
<td>2. Using controlled practice.</td>
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<tr>
<td>d. Repeat and elaborate on the meaning portion as necessary.</td>
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<tr>
<td>Seatwork (about 15 minutes)</td>
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<tr>
<td>a. Provide uninterrupted successful practice.</td>
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<td>b. Momentum — keep the ball rolling — get everyone involved, then sustain involvement.</td>
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<tr>
<td>c. Alerting — let students know their work will be checked at end of period.</td>
</tr>
<tr>
<td>d. Accountability — check the students’ work.</td>
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<tr>
<td>Homework Assignment</td>
</tr>
<tr>
<td>a. Assign on a regular basis at the end of each math class except Fridays.</td>
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<tr>
<td>b. Should involve about 15 minutes of work to be done at home.</td>
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<tr>
<td>c. Should include one or two review problems.</td>
</tr>
<tr>
<td>Special Reviews</td>
</tr>
<tr>
<td>a. Weekly review/maintenance</td>
</tr>
<tr>
<td>1. Conduct the first 20 minutes each Monday.</td>
</tr>
<tr>
<td>2. Focus on skills and concepts covered during the previous week.</td>
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<tr>
<td>b. Monthly review/maintenance</td>
</tr>
<tr>
<td>1. Conduct every fourth Monday</td>
</tr>
<tr>
<td>2. Focus on skills and concepts covered since the last monthly review</td>
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Table 2

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<thead>
<tr>
<th>Percentage of Teachers in Each Treatment Group Using Instructional Behaviors for Criterion Time Periods</th>
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<tbody>
<tr>
<td>Instructional Behaviors</td>
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<tr>
<td>-------------------------</td>
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<tr>
<td>Review Previous work (1 minute or more)</td>
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<tr>
<td>Pre</td>
</tr>
<tr>
<td>Post</td>
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<tr>
<td>Delayed</td>
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<tr>
<td>Check Prior Homework (at least 2 minutes)</td>
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<tr>
<td>Pre</td>
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<tr>
<td>Post</td>
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<tr>
<td>Delayed</td>
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<tr>
<td>Assign Homework (1 second or more)</td>
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<tr>
<td>Pre</td>
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<tr>
<td>Post</td>
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<tr>
<td>Delayed</td>
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<tr>
<td>Development (at least 5 minutes)</td>
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<tr>
<td>Pre</td>
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<tr>
<td>Post</td>
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<tr>
<td>Delayed</td>
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<tr>
<td>Directions for Seatwork (1 minute or less)</td>
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<td>Pre</td>
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<tr>
<td>Post</td>
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<tr>
<td>Delayed</td>
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<tr>
<td>Monitored Seatwork (15 minutes or less)</td>
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<tr>
<td>Pre</td>
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<tr>
<td>Post</td>
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<td>Delayed</td>
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<tr>
<td>Unmonitored Seatwork (2 minutes or less)</td>
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<tr>
<td>Pre</td>
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<td>Delayed</td>
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<tr>
<td>Check Seatwork at End (at least 1 minute)</td>
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<tr>
<td>Pre</td>
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Table 3

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<tr>
<th>Mathematics Achievements of Students Whose Teachers Had Been Assigned to Different Treatment Groups</th>
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<tr>
<td>Measure</td>
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<tr>
<td>Curriculum-Referenced Test</td>
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<tr>
<td>Pre-Mean</td>
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<td>CAT Computation Test</td>
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<td>CAT Concepts Test</td>
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<td>Pre-Mean</td>
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Note: Raw scores are reported for the curriculum-referenced test. Standard score equivalents (NCE) scores are reported for the California Achievement Test.
to understand more clearly the specific acts of leadership that principals perform for influencing teachers.

Our observations of the principals during the experiment suggest that they performed five critical functions:

1. Priority-setting function. By participating in the training with teachers, the principals demonstrated to teachers that this staff development program was a priority. The principals also demonstrated that the improvement of mathematics instruction in their schools was important.

The priority-setting function may explain the differences between the treatment groups on the achievement tests. We think that the involved principals encouraged teachers to improve students' performance on the types of mathematics content emphasized on the curriculum-referenced test. The regular inservice teachers, however, were probably most influenced by the teachers' manual for Active Mathematics Teaching, which stresses computation skills.

2. Compliance function. We observed that the involved principals used varied, sometimes subtle methods to bring about teacher compliance with the instructional model. Examples of these methods were use of rewards (including encouragement and emotional support), persuasive argument, appeal to authority (for example, referring teachers to research on the model's effectiveness), and expressions of enthusiasm for the model.

3. Training function. You will recall that the involved principals conducted several cycles of clinical supervision with their teachers. Clinical supervision involved guided practice and feedback, which are effective training methods for bringing about implementation of new instructional practices.

4. Instructional policy-making function. Certain instructional practices involve norms, resources, and staff beyond the individual teacher and his or her classroom. For example, we discovered that a teacher feels uncomfortable about initiating homework unless his or her colleagues also require homework. The involved principals exhibited leadership by working with teachers to establish a schoolwide homework policy.

5. Maintenance function. One of the most critical leadership functions is to establish mechanisms for insuring that a school improvement process is maintained over time. As the leader in closest proximity to teachers, the principal can work with teachers to insure that they continue implementing new instructional methods—especially methods that are more demanding, but also more effective than conventional practice.

This list of instructional leadership functions is by no means exhaustive, but it does serve to indicate that instructional leadership is an ongoing, complex, and demanding process.

Interestingly, the regular inservice group implemented the staff development program very well, even though their principals did not participate in it. One explanation for this finding is that in this experiment, central office administrators played an essential role in the implementation process. For example, the superintendent and assistant superintendent in each district had endorsed the staff development program and encouraged schools to participate (the compliance function). They also had identified mathematics as a focus of improvement (the priority-setting function).

This explanation suggests that principals are not the only school personnel who can be instructional leaders. We agree with Gerson, Carnine, and Green (1983), who argue that it is misleading to focus on a single leadership role like the principalship. Curriculum directors, teacher supervisors, and other personnel should be able to perform effectively one or more of the five leadership functions identified above.

The title of this article posed the question, "Should principals participate in teachers' staff development programs?" The findings of our experiment suggest that the answer is "Yes." No one experiment is conclusive, of course, but we think that educators should consider the implications of the findings for their schools. Would your staff development program for teachers benefit by actively involving principals and other administrators in it?

(See Page 2 for References)

Direct Instruction Teacher Training Program at Purdue

A three-year teacher training grant has been awarded to Purdue University to develop a special education master's degree program explicitly based on the Direct Instruction Model. The program will prepare teachers to work with mildly handicapped children—especially those identified as learning disabled. Financial assistance (a monthly stipend plus tuition and fees) is available for four full-time graduate students (three in-state and one out-of-state), as well as for three part-time students for each of three academic years beginning in the fall of 1984 and ending in the summer of 1987.

Coursework on Theory of Instruction (Engelmann & Carnine, 1982), Direct Instruction Reading (Carnine & Silbert, 1979), and Direct Instruction Mathematics (Silbert, Carnine, & Stein, 1981), expressive writing (Engelmann & Silbert, 1984), and language comprehension as the heart of the training program. More importantly, students will receive on-going supervised teaching experience during each semester of the training program.

Anyone interested in obtaining more information is encouraged to contact Dr. Edward Kamenui, Purdue University, Special Education Section, (5555) West Lafayette, Indiana 47907. Phone (317) 494-7342.

The Teacher is Kathy Feiler
Rocky’s Boots

By Jerry Silbert
Douglas Carrollene
John Noell

The stated purpose of Rocky’s Boots, according to the publisher, is to “build a basic groundwork in logic skills that students will use for the rest of their lives.” This goal is certainly worthy, although rather ambitious. Rocky’s Boots is acclaimed as one of the best software computer programs designed for teaching problem solving. When examining Rocky’s Boots, the authors soon saw why the program is so popular. It is an extremely “user friendly” program that makes full use of the wonders of computer graphics.

From a computer programmer’s viewpoint, Rocky’s Boots is definitely deserving of an award. First, it simultaneously tracks the exact position of many objects on the screen while they move and trace the complicated digital logic through time, displaying the progress of the logic paths with color changes. Second, it appears to be completely bug-free, which is noteworthy in a program this large and complex. Above all, even though what is happening in the computer program is very complex, controlling the mechanics of the game is simple for the student.

From an Instructional designer’s viewpoint, however, three important questions must be raised regarding the role of Rocky’s Boots in the classroom.

1. Are the skills taught worthwhile?
2. Do the skills taught generalize to other worthwhile areas?
3. Are the instructional sequences and exercises presented in the program appropriate in content and difficulty level for the target audience?

Description of the Program

Rocky’s Boots is divided into six major parts. The first five parts are tutorials designed to teach students how to construct machines that will conduct electricity. The machines are composed of families of computer circuit components that determine the logic of computer chips. Key components are shown in Figure 1. At the advanced level additional components, such as flipflops (a type of switch), clocks, and delays, are used.

In the tutorial part of the program, the students learn the function of these components and how to attach the components together to build machines on the video screen. The tutorials also introduce the kicking boot (Rocky’s Boots), which is used in the games. The kicking boot, when activated, kicks targets into a scoring area. The goal of all the games in Rocky’s Boots is to kick target objects of a specified color and shape into a scoring area. Below is a picture of the kicking boot attached to a sensor.

Figure 2. Sample of game targets.

The sensor is a blue sensor, which is activated whenever a blue object passes by the sensor.

When a blue object passes by the blue sensor, electricity will pass through the sensor to the kicking boot, which will kick the blue object into a scoring area.

When playing a game, the player will be shown a group of target objects. About half the targets will have plus signs in front of them, while the other objects will have minus signs. The object of the game is to build a machine that will kick all the plus targets into the scoring area while not kicking any of the minus targets into the scoring area.

In a simple game, the players might be shown the targets in Figure 2. Note that the plus targets are either diamonds or circles. The player must design a machine that will kick all the diamonds or circles while not kicking any triangles, crosses, or squares.

Figure 3. A machine to select diamonds and circles.

An OR gate has been attached to a diamond sensor and to a circle sensor. An OR gate will pass on electricity to the kicking boot when electricity enters the gate through either socket. So whenever a diamond or circle target passes the machine, the kicking boot will be activated and will kick the target into the scoring area.

Rocky’s Boots includes 32 games, divided into 4 sets of 8 games. Each set is progressively more difficult. While games in the early set require building relatively simple machines consisting of only 2-3 parts, games in the later sets require that a machine include more than 10 parts. Figure 4 shows a replica of a machine needed to win a more advanced game.

The procedures the student must follow for building machines are relatively simple when one considers the complexity of what is happening in the computer. To move parts on the screen, the student places the cursor on the part and presses the space bar. The part can be moved around the screen by pressing one of four keys on the keyboard. (One key moves the cursor to the right, while others move it up, down, or to the left.) When the player wants to attach two parts, the player positions the parts and presses the space bar.

Figure 4. Model of an advanced machine.

The diagram in Figure 3 shows a machine that the student might construct to win a game in which the positive targets are diamonds or circles of any color.
Rocky's Boots

Evaluation
Although an excellent job is done of teaching the mechanics of playing the game, little attention is given to teaching students strategies of how to win the game. The tutorials do not show students a group of targets and then tell the student how to figure out what machine to build. The students are expected to figure out solutions on their own. If a student builds an incorrect machine, the program will not tell what the correct machine should have been. The only corrective feedback for students who develop an incorrect strategy is to use all of the targets which ends up in the scoring area.

The teacher should have the game correct- ly, all the targets with. The student is expected to use the positions of the targets in in- ducing what he or she did wrong and fix- ing up the machine.

The publisher advertises the game as appropriate for 7-year-olds through adults. The authors are not aware of anyone under 7 or over 70 who has succeeded in completing all of the games. One of the authors, after going through the instructions included in the program, was able to successfully play only about half of the games. A study is needed at Stanford of 8th graders to study skill transfer from Rocky's Boots to other problem solving areas.

After three weeks of playing Rocky's Boots, students were unable to successfully complete many of the games. The researches were unable to complete the study of transfer because of the lack of student mastery. From the ex- perience of the authors and the study at Stanford, it seems safe to say that the appropriate range of students is much narrower than that indicated by the publisher.

If teachers want to use Rocky's Boots as part of an instructional package designed to actually teach students rather than expose them to problem solving situations, the teachers must be prepared to do a great deal of sup- plementary teaching in addition to that

1. Math Word Problems
   In this study we will explore the effects of a new curriculum in teaching multiplication and division word-problem skills. When a student in the experimental condition makes a
   2. Learning Vocabulary
   The main variable of interest in this study is review schedules. Two groups of students will be presented with a vocabulary building program. The ex-
   3. Health Ways
   This study focuses on the effects of a computer simulation in teaching health facts and strategies. Two groups of students will receive a three-week health curriculum. The experimental group will receive a written curriculum along with a
   4. Story Grammar
   Two groups of students will receive reading instruction on a computer. Experimental plus students will be asked comp-

5. Immediate Feedback During Lecture
   This study will investigate the effects of providing the teacher with immediate student response data during the lecture.

6. TeacherNet Studies
   Two studies will be conducted with

7. Graduate Student Financial Support for Leadership Training in Special Education Technology

Program Overview
This leadership training program in special education views the effective instructional leader as one who must be knowledgeable in the specific, daily-in-

1. Variables of instructional design that are proven to be effective in
   2. The capabilities (both applications and limitations) of computers in
   3. Research design, evaluation, and field testing with emphasis on field-

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College of Education
Exceptional Learner Program
University of Oregon
Eugene, OR 97403

DIRECT INSTRUCTION NEWS, WINTER, 1988-89 9
A Place Called School


John Goodlad’s most recent book, A Place Called School, is a forward-thinking and provocative volume. It is based on years of work by Goodlad and dozens of colleagues on a large-scale research project called, “A Study of Schooling.” In this study, the Goodlad team contacted in-depth, on-the-scene research in 13 communities which reflected varying demographic characteristics and which were spread across seven regions of the country. In each community, they looked at an elementary school, a middle or junior high school, and a high school. In all, they observed in over 1,000 classrooms in 38 different schools, interviewing nearly 10,000 teachers and parents and more than 17,000 students in the process. The study covered various facets of education, including curriculum, instruction, availability and use of resources, and school-community relations.

The book can be divided into two major sections. Chapters 1-8 provide the background for and the results of the study. Chapters 9 and 10 identify possibilities for reforming schools as we presently know them and for organizing schools of the future, respectively. The description of “what is” (Chapters 1-8) is a fascinating account of the current state of American education — one which calls loudly for improvements. The description of “what could be” (Chapters 9-10) offers many exciting and refreshing possibilities for the future. It is in these two chapters that Goodlad’s book differs from other recent accounts of the condition of schooling in our country. While previous authors typically limit themselves to attacks on the problems, Chapters 1-8 provide the viable possibilities for educational renewal. Starting with the assumption that school improvement must involve all facets of the educational program, Goodlad goes far beyond the frequent lamentations that our schools principals acted more like instructional leaders, things would be fine. Goodlad agrees that the principal holds an important role in school improvement, but he sees the need to improve many other elements of schooling as well. He is not saying less than a thorough outline of how school improvement efforts can begin and how they can then proceed.

This is a stimulating volume filled with hope for the future of schooling in America. I recommend it as a valuable and inspiring reference for parents, policy-makers and professionals at all levels in our educational systems.

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By Stan Paline

Designing Curriculum and Instruction

Stiegfried Engelmann and Douglas Carnine

Reviewed by Jerry Brophy

Editor’s note: This review is copyrighted (1980) by the American Psychological Association. It is reprinted with the permission of the publisher and author from Contemporary Psychology, 1986, vol. 29, No. 6, pp. 622-4.

This is an ambitious, important book. The authors have drawn on years of experience in systematic development and revision of curriculum and instruction programs in order to present guidelines for today, keeping the content to be taught, sequencing it for maximal efficiency, and teaching each specific concept or skill in ways that minimize confusion or frustration. The result is a comprehensive, treatment that goes far beyond what is contained in typical books on curriculum design or instructional psychology or technology.

The book is difficult to describe because it represents an entirely new and different contribution in many respects, rather than being merely the latest example of an existing genre. It resembles some of Gagne’s more applied books on teaching analysis in some ways, but it analyzes instruction (what is shown and said to the learner) in addition to the demands of the tasks to be taught. It is comparable in some ways to books on curriculum theory, but there is relatively little formal theorizing and a great deal (385 extra large, double column pages) of presentation of example and applications. In effect, the book is a “how to do it” manual for designing curriculum and instruction to suit particular needs or contexts, but it is firmly grounded in basic research and strategy manuals on chess or bridge. The authors do not merely discuss available strategies (how good they are, how to teach them, how each option should be used), as well as offer explanations for why particular procedures are or are not best suited to particular contexts.

For readers already familiar with the authors, it should be noted that the book is not a manual written to accompany the DISTAR programs (basic skills curriculums for elementary grade students) with which they are associated. Nor is it merely an explication of principles specific to these programs (although unsurprisingly, most of the examples are taken from DISTAR curricula). Instead, it treats general issues of design of curriculum and instruction by classifying cognitive knowledge into types and then elaborating these with specific applications that pertain to particular subtypes and situations.

Achieving Faultless Communication

The most basic principles include the selection and juxtaposition of examples in order to teach efficiently through faultless communication. This is accomplished through a logical analysis of the instruction, followed by empirical testing. The logical analysis is designed to ensure that the instruction communicates exactly what is intended, and nothing else. A faultless communication admits of only one interpretation. If it produces only the expected response, the instruction is faultless and is retained (although some prunings of unnecessary redundancy may still be in order). If it produces unexpected responses, the instruction is faulty and needs revision (different selection or sequencing of examples or the accompanying verbalization — the specifics will vary with the nature of the unexpected responses). Finally, if the learner does not take the instruction seriously or is unable to respond to it, the problem is attributed to deficiencies in the learner’s motivation or presumably available response repertoire, and remediation concentrates on changing the learner rather than the instruction.

Communications are judged faultless if they meet the following "structural requirements": (a) They present a set of examples that are "the same" with respect to one and only one distinguishing quality (the quality that is to serve as the basis for generalization); (b) they provide two signals — one to identify every example that possesses the quality to be generalized, and a second to identify every example that does not have this quality; (c) they demonstrate a range of variation among positive examples to induce a rule that is appropriate for classifying new examples on the basis of "sameness"; (d) they show the limits of permissible variation by presenting negative examples; and (e) they provide a test of generalization that involves new examples that fall within the range of quality variation demonstrated earlier. The sameness is demonstrated through positive examples, selected and juxtaposed not merely to show the most typical or easiest observed examples of the concept, but to show the entire range of examples to which the concept applies for, if this would be too much for the learner to handle at this time, to show that portion of the range of variation that the instructor expects the learner to master.

The basic juxtaposition rules are as follows: "To show sameness, juxtapose examples that are greatly different and treat each example in the same way; to show difference, juxtapose examples that are only minimally different and treat them differently" (pp. 11-12). In teaching the concept of "truck," for example, the instructor would include pictures of a variety of trucks (panel trucks, tankers, moving vans, etc.), in order to be sure that the examples do not inadvertently "stipulate" that the term truck applies only to a particular type of truck. Furthermore, to help clarify the limits of the concept, negative examples would concentrate on objects that are just minimally different from trucks (cars, trains, punchcarts), rather than objects that are drastically different (apples, roses).

Including the full range of variation among the positive examples allows the learner to interpolate — to recognize that the concept applies to all examples that fall in between these extremes. Also, concentrating the negative examples on objects that are just minimally different from the concept to be generalized allows the learner to extrapolate — to recognize that the concept does not apply to objects that are just slightly different. Using these and other principles, the authors present guidelines and application for teaching everything from basic forms such as nouns (truck) or non-comparative single-dimension concepts (between, over, curved) to concepts such as specific gravity or the balance principle and complex skills such as identifying the main idea in a paragraph, composing expressive prose, factoring mathematical expressions, or solving scientific problems.

Different basic forms call for different approaches to instruction. For example, non-comparative concepts (such as under, running, or pointed) are usually taught most efficiently by beginning with negative examples and then showing positive examples. Nouns, on the other hand, are usually best taught by...
beginning with positive examples. Sometimes both ways work equally well, and sometimes one way is more effective than the other. The key is that both ways must be tried. The next question is which way to use. It is recommended that students try both ways and see which way works better for them. The best way is the one that works best for the student. The next question is whether to use a simple or complex method. It is recommended that students use the simplest method possible, and then move on to more complex methods as they become more comfortable with the simpler ones.

New Concepts, Terms, Suggestions

The book is slow going at first, because the authors are grappling with very fundamental, yet unfamiliar, issues that cannot be addressed through common used terminology. The authors must introduce their own concepts and terms, moving slowly and redundantly with numerous examples. Eventually, they progress from simple concepts that can be taught in less than a minute with a few examples to discussion of highly complex concepts and integration of various strands of curriculum into year-long programs. The authors that I found particularly insightful or innovative included information about why instruction intended to induce discovery learning often fails because the event designed to induce discovery is allowed to occur before the learner is ready to experience it. This is a common mistake in the design of instruction. The authors also pointed out that the use of examples is crucial in the design of instruction. They showed how the use of examples can be effective in teaching complex concepts. The authors also emphasized the importance of feedback in the design of instruction. They showed how feedback can be used to help learners understand the concepts they are learning.

In addition, there is a wealth of valuable advice on: selecting and juxtaposing examples effectively; presenting those examples in clear language; and so on. The book is highly recommended for anyone interested in the design and implementation of instruction.
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Computers and Writing

Editor's note: The following article is the first of a two-part article that appears in this issue of MICROCOMPUTERS IN TEACHER EDUCATION.

Part 1, Writing With A Computer: An Historical Overview

The use of computers in writing instruction has a unique history. It is the story of rapid advancements in technology. It is also an historical story with roots dating back to the earliest forms of written communication. The educational implications of writing with a computer suggest a number of ideas for future research. Shostak (1984) observed, "Although many educators are not yet aware, we are, with good reason, in the midst of a technological revolution that is already having its effect on a number of American classrooms around the country." (p. 131).

Why do experts in writing instruction (Graham, 1984; Marcus & Blau, 1983; Piper, 1984; Schaniz, 1983; Schwartz, 1983; Shostak, 1984) believe that a "revolutionary" change is occurring in the way we think about and teach writing? A number of ideas are worth summarizing. First, the technological revolution is quickly changing the nature of writing. Second, the development of new communication technologies (e.g., electronic mail, personal computer networks) is changing the way we think about written communication. Finally, the development of new communication technologies (e.g., electronic mail, personal computer networks) is changing the way we think about written communication.

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Simulated and Naturalistic Instruction of Community Functioning Skills with Mentally Retarded Learners

By Paul E. Bates and Anthony J. Hoer, Southern Illinois University-Carbondale

A major goal in training the mentally retarded is the development of skills that they may need to function effectively in a range of community settings (Brown, Nipset, and Hamer-Nipset, 1976). Since most community-living behaviors are acquired through enacting these in various social environments, generalization of acquired skills is extremely important. According to Stokes and Bar (1977), the presence of consistent, relevant, and scientifically identifiable community-living behaviors that will generalize across similar environments. They also predicted that training the mentally retarded in community-living skills will facilitate their community living. In summary, community-living skills training should be more effective if it is conducted in a natural community setting. In this paper, we describe a study that was conducted in a community setting to assess the effectiveness of community-living skills training.

The study was conducted in a community setting where mentally retarded individuals were enrolled in a community living skills training program. The program was designed to provide these individuals with the skills they will need to live independently in the community. The program included an instructional component and an assessment component. The instructional component involved the use of simulated and naturalistic instruction to teach community-living skills. The assessment component involved the use of direct observation and standardized measures to assess the effectiveness of the training program.

The study involved a random sample of 20 mentally retarded individuals. The participants were divided into two groups: a simulated instruction group and a naturalistic instruction group. The simulated instruction group received instruction in community-living skills through the use of simulated (i.e., controlled) environments. The naturalistic instruction group received instruction in community-living skills through the use of natural (i.e., real-world) environments.

The results of the study indicated that the naturalistic instruction group showed greater generalization of community-living skills across different environments than the simulated instruction group. This finding supports the hypothesis that training in community-living skills should be conducted in natural community settings.

In conclusion, the study provides evidence that training mentally retarded individuals in community-living skills through naturalistic instruction is more effective than simulated instruction. Further research is needed to determine the most effective methods for training community-living skills and to identify the environmental conditions that facilitate the generalization of these skills.

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Community Functioning Skills

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Learner Efficiency

The ability of an individual to discriminate relevant from irrelevant information and to acquire from one experience to another related situations may be considered a measure of learning efficiency. The effectiveness of mental retardation who experience mental retardation are less efficient learners than are individuals with normal intelligence. It might also be inferred that the more severe the level of mental retardation, the less efficient a person will be in acquiring and generalizing new information. Although these observations should not be surprising, the research literature on generalization of community living skills by mentally retarded persons has not considered the role of this variable in any detail. For example, Neel et al. (1978) reported successful generalization from simulated training on bus riding skills (i.e., cardboard mode of city streets and doll) whereas Coon, Vogelrög, and Williams (1981) failed to show generalized community performance until direct instruction was provided in the community. The equivocal results of these studies frequently are cited in comparisons of simulated and direct instruction, but seldom it is mentioned that most of the participants in the Neel et al. study were female, whereas the young woman in the Coon et al. study was severely retarded.

In a federally funded research study that is examining the effectiveness of two levels of instruction (pictorial simulations and community training) across two levels of retardation (mild and moderate) for four community living skills (Bates & Cuvo, 1984), preliminary results suggest that simulated instruction (pictorial training) did not result in significant generalization to the community for either group of students (mild and moderate retardation) on grocery shopping (the first skill trained), whereas direct instruction in the community did result in skill acquisition and generalization for both groups. On the second community living skill (doing laundry) mildly retarded students generalized better from school to the natural conditions; however, direct community instruction still was the superior method. These initial results tentatively suggest two conclusions related to level of retardation and community living skills. Direct instruction in community environments (concrete content) for both levels of retardation will result in more mental retardation generalize better from abstract instructional formats than the concrete community instructional formats. These conclusions are tentative at best and are restricted by the nature of the simulation (i.e., pictorial simulations) and community training objectives. With extensive generalization assessments across environments of different instructional formats may be more adequately assessed and unique instructional designs may be identified for varying student populations.

Program Recommendations

Individuals with mental retardation should be involved in community and training programs that participate as actively as possible in all aspects of community living. Participation in community living should be from the early years of a child's life. Referral is necessary in regard to identifying "best practice" procedures for facilitating independent and semi-independent community participation by mentally retarded citizens. Several practices that have been identified as being obtained from the community living skills training literature. These recommendations were based on the research that may be required in a specific situation.

1. Educators should conduct detailed assessments of their students' current and subsequent environments to identify individualized community training objectives and determine the range of stimulus and response variability associated with these community activities.

2. Educators should write in general-case programming and when training on a single instance or limited range of instances may be more efficient. For example, it may facilitate students' integration into the community if they had generalized skills with respect to mobility and use of fast food restaurants. But if it is known that the student will live in a specific group home, it may be more functional and efficient to shop in the neighborhood store and help wash the home's washer and dryer.

3. School-based instruction of community living skills can be modified to: stimulus materials that require responses as similar as possible to those required in the community (i.e., use real material whenever possible).

4. School-based instruction of community living skills should approximate the interpersonal and other related variability associated with community performance (different instructors should be used and natural distractors should be present).

5. School-based instruction should be conducted concurrently with community training or accompanied by frequent and extensive assessments of generalized community functioning skills.

6. Although natural stimulus materials and response requirements are better for students from all levels of mental retardation, the need for more naturalistic instruction is greater for students with more severe retardation.

7. Although all students labeled mentally retarded would benefit from direct instruction in the community, students with more severe levels of retardation may require more frequent and extended amounts of community training to acquire and generalize community functioning skills most efficiently.

Research Directions

The search for "best practice" in teaching community-functioning skills to mentally retarded learners must focus on generalization outcome measures. Sixteen classes of generalization have been defined under four major categories (Diamond & Rosenbaum, 1979). The major categories include generalization across time, settings, behaviors, and subjects. In addition to these four categories taken independently, the other classifications of generalization in the Drabman et al. generalization map primarily are combinations of these four. In most research, each of the categories required as a condition for generalization in the environment in which it had been used in too cavalier a fashion, without proper recognition of the many variables that may be required in a specific situation.

When community living skills are taught to students in a school setting, we would like students to emit new, untrained responses in the appropriate community setting at some time subsequent to acquisition training. This performance involves a complex combination of stimulus and response generalization, and skill maintenance. The nature and degree of generalization that students might evidence depends on the correspondence between the stimulus features and response requirements in the training environment and subsequent community environment. In a previous analysis of this issue, the training environment has been described in terms of a matrix consisting of three settings and three levels of materials used to teach community-living skills (Cuvo & Davis, 1983). Training settings can be artificial, simulated, or natural; materials can be artificial, simulated, or natural. In fact, each of these levels of settings and materials could be described by combining a community living skill with an instruction is to prepare a community-living skill in the natural environment with real materials, the discrepancy between the training environment and community environment defines the degree of transfer of stimulus control that researchers must examine.

Specific questions that need to be addressed in future research include: (a) How many training instances and how much variability among them are necessary to promote generalization across settings and responses for specific community tasks? (b) What are relevant and irrelevant stimulus dimensions for specific community living tasks? (c) Are strategies for promoting generalization specific to the task, subject population, and setting features employed, or will they promote generalization across a wide range of tasks, students, and settings?

A related research issue pertains to the assumption that when students are exposed to conditions of training effects actually took place. Issues of measurement and the extrapolation of design relevance have been raised. Separate generalization baselines should be taken in addition to the acquisition- maintenance phase in experimental control studies. Conditions of community-living skills have typically used multiple-baseline designs. It has been recommended that two or more variables of the multiple-baseline design be evaluated in instructional research (Cuvo, 1979). One variety of the design (e.g., multiple baseline across subjects or settings) is useful when the experimental conditions are too extensive to be used simultaneously. The second design (e.g., multiple baseline across responses) is used when the experimenter wants to examine more complex set of generalization across multiple baseline settings. The multiple-baseline across responses setting suggests training efforts generalized across several responses, across settings, or both. The generalization across settings occurs, the instructional program is effective. If generalization does not occur across settings, the program may be on the several behaviors should take place. Finally, group-experimental designs could be employed to investigate the parameters of generalization. For example, independent variables could be created that manipulate the number of training conditions. Also, levels of student functioning (e.g., mildly, moderately, severely) could be incorporated in experiments to treatments-by-levels factorial designs. The generalization may be specific to an environment based on the number of outcomes sought by specific variables that may effect the success of direct instruction efforts in simulated and naturalistic settings. Greater community integration and participation by mentally retarded learners must be actively pursued by practitioners and researchers.

In this article we have attempted to focus attention on specific variables that may effect the success of direct instruction efforts in simulated and naturalistic settings. Greater community integration and participation by mentally retarded learners must be actively pursued by practitioners and researchers.

References


Computers & Writing
Continued from Page 13
The development of a computer on a microchip during the early 1970s was the real breakthrough that made the computer practical to use as a word processing tool. Early word processing computers were dedicated to word processing and could perform only a few tasks. Such word processors are widely used today in business and are referred to as "dedicated word processors."

Today, virtually every home computer can be used for a variety of purposes, including word processing. Word processing programs that convert a microcomputer into a word processor are available for almost every brand of microcomputer.

(Next issue, this story continues with a survey of current research and ideas for using computers in writing.)

References

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