The Impact of DI
Striving for Literacy in Tuscaloosa, Alabama

By Roberta S. Weisberg
Tuscaloosa City Schools
and Paul Weisberg
Department of Psychology
University of Alabama

When Distar Reading was considered by the Tuscaloosa City School System for initial use in the early grades of those schools which contained hard-to-teach children, the following was known. The vast majority of the children were Black, from poverty-level backgrounds and attended inner-city schools where from 65 to 90% were eligible for free or reduced lunch programs. For as long as school administrators and principals could recall, many of these quarter-of these children who were passed onto the junior high schools were functionally nonreaders. By third grade, over 95% had reading scores on standardized tests below the 50th percentile, and at least 60% of them fell into the bottom 3 stanines. Only 22% of a randomly selected group would place this low.

School A: Beginnings

Shortly after our return from a 1976 sabbatical leave at the University of Oregon, and excited about the possibility of launching DI programs in Tuscaloosa, Roberta obtained permission to begin a small-scale project at School A. School A was a small school which at one grade level contained no more than two classes. A close friend of Roberta's was the Title I teacher there. This teacher helped to influence the principal and the other teachers to try this new program. While in Oregon, Roberta wrote the Director of Instruction in Tuscaloosa to tell about the Distar In-struction training she was getting and how DI could help the kids in Tuscaloosa. The Director, who had heard of DI, was impressed and was able to convince the Superintendent to give DI a chance.

It was to be a three-year pilot project. Roberta chose to phase in the DI programs, starting the first year with Distar Language and Reading programs just for classes in first grade, Special Education, and for kids pulled by the Title I teacher. In the second year, second and third grade teachers also used these programs. In the second implementation year, the workshops were added to second grade. Employed then as a full-time Title I evaluator and psychologist, Roberta squinted in about 13 morning hours per week to train and supervise the teachers. Training was tight: the teachers were not accustomed to having someone else beside them as they taught, modeling entire lessons, helping with multi-step formulas, and making certain the teachers and kids repeated until firm. Title I truly supplemented the regular teacher by continuing DI instruction or repeating lessons or formats. The teacher did not use other programs.

The Program Was Working

From its inception, the data from standardized tests were analyzed to see if Distar Reading was working. No broad reading program before Distar was ever so carefully scrutinized and evaluated for effectiveness. The initial results were dramatic. For almost every year prior to 1978, approximately 70% of School A's third graders taking the Stanford Achievement Test (SAT) fell within the bottom 3 stanines on Total Reading. In 1978, when the first group of third graders with two previous years of Distar Reading under their belt took the SAT, 10% of the youngsters now scored in the bottom 3 stanines.

Ramilifications and Other Changes

Word about School A's success spread slowly at first. Talk about program effectiveness passed from among the handful of successful teachers using DI to those who were not. Inspired teachers came to observe at School A. They also visited Paul's day care center which implemented Distar Reading with 4 and 5 year-olds. Sometimes Paul would bring the kids to certain schools during an in-service day and have them... Continued on Page 5

The Tactile Reception of Speech by the Deaf
A Historical Perspective

By Robert J. Rosov, Director
Department of Biomedical Engineering Research Division
Institute of Logopedics
Wichita, Kansas

Children with profound hearing impairment invariably suffer severe deficiencies in expressive and receptive speech and language development (Ling, 1976). Although lip-reading and hearing aids enable partial reception of speech, the acoustic information necessary for the accurate perception and intelligible production of speech is largely unavailable to the profoundly deaf. Despite special educational programs, materials, and personnel, the academic progress of these children lags significantly behind that of their hearing peers, and their social and economic potentials are considerably reduced.

For the past fifty years, researchers in a variety of disciplines have wondered whether speech could be adequately perceived and learned through the sense of touch (Kirmam, 1974; Reed et al., 1982). This was a question with which Wes Becker introduced me to Zigm Engelman in mid 1971. I was then a Research Associate at the Oregon Research Institute (ORI) in Eugene, involved with the development of a biomedical engineering program there. Zigm was convinced that it was possible to perceive speech actually because of some experiments in tactile pattern recognition he had performed with Don Bitzer at the University of Illinois some years before. He argued that he could develop the instructional methods to train children and adults to fluently perceive speech through the skin, if I could build a device which would (faithfully) transmit all the acoustic components of speech to skin.

At the time, I was unaware of previous research in this field, and so set about to reinvent the wheel. From experience in speech research at Haskins Laboratories (now in New Haven, Connecticut), I knew that speech could be broken down (“analyzed”) into fifteen or so bands of channels for telephone transmission and then re-assembled (“synthesized”) at the receiver with little degradation in quality and intelligibility. Such devices were called “vocoders” (from “voice coder”); and had been investigated at Bell Laboratories since the later thirties (Dudley, 1939). We would present the acoustic energy present in each of the analyzer channels of the vocoder to different points on the skin. Since the skin is insensitive to frequencies much above 400 cycles per second (Hz), we had to convert the audio frequency in each channel to vibrato
tional energy at some relatively low frequency; we chose 60 Hz and utilized a vibrater which would operate at this frequency for each channel. Since the output of the analyzer portion of the vocoder contained virtually all the speech information at the input, it seemed reasonable that presentation of this information to the tactile form could result in speech perception if the brain was assisted by the right kind of training and could interpret the tactile patterns in much the same way it interprets speech and language.

ORI agreed to fund the construction of the device, and Zigm agreed to fund the training personnel costs. Early in 1972, a young technician, John Hunt, was hired to assist in the design and fabrication of the device, which we now called a “tact
tural vocoder”. The device was assembled by late 1972, and spanned the frequency range from 100 Hz to 4000 Hz in 24 channels so that high and low speech frequencies, which are not present in telephone transmission, were included. The vibrators were organized in five modules of five each (minus one) which were worn on either one or both arms. Both subjects and trainers had their own microphones so that the subject could perceive both their own speech as well as that of the trainer.

Continued on Page 4

HELP US ADVERTISE THE ANNUAL CONFERENCE AND GET NEW MEMBERS

1. With this issue are FOUR EXTRA COPIES of ADI NEWS and the conference brochure. Post the brochure. Give the NEWS and brochures to friends who should be a part of our Association.

2. Note: Those joining NOW receive memberships through August, 1986. (See Page 16.)

DIRECTIONS FOR INSTRUCTION NEWS, SPRING, 1985
Dear Editor,
I am interested in communicating with teachers who have used Direct Instruction with hearing impaired students. Has it been done? Does it work well? What are the problems or areas in need of adaptation when using this approach with hearing impaired children? What experiences do teachers have using sign language with Direct Instruction?
I would like to have this information before expanding Direct Instruction’s use to the hearing impaired children in our school district. Other special-needs students are succeeding with Direct Instruction and I’m excited about it.
Karen Suhadolnik, Product Sales Administrator, suggested that I might get this information through Direct Instruction News if a request of this sort is published there.

Sincerely,
Donna Radford
Mills School
Klamath Falls, OR 97601

Dear ADI,
In August I attended Randy Sprich’s Secondary Management Class. He told us about his new book to be published in December, 1984. I need to know the publisher and address so I can purchase a copy. My school is looking for ideas on how to make our management better and I’m sure his book will be a monumental help. Thank you for sending me the info quickly.

Sincerely,
Donna Radford
Mills School
Klamath Falls, OR 97601

Advertising Policies and Rates

The Direct Instruction News will publish advertisements for materials, programs, books, training (conferences, workshops), and services (consultation, evaluation) related to Direct Instruction. All proceeds from the sale of advertising space will be used to help pay publication costs incurred by the News. Ad sizes and corresponding costs are as follows:

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The Direct Instruction News is published Fall, Winter, Spring and Summer, and is distributed by mail to members of the Association for Direct Instruction. Readers are invited to submit articles for publication relating to D.I. Submit contributions to the Association for Direct Instruction, P.O. Box 1047, Eugene, Oregon 97440.

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Departments
Teacher-to-Teacher
Supervisor’s Briefing
Dear Shirley
Shirley Johnson
Elementary Special Education

Dear Shirley:

The purpose of this classroom would be to prepare incoming students for a specific classroom, or for placement in some classroom. Here’s how it would work: A kid goes to the portable entry classroom. Instead of going directly to the classroom, the kid goes to the port of entry classroom, which has one or two teachers (or hotspot instructional aides) who prepare the kid for some group. (People in the port of entry room have information about where the various groups are in the different programs.) Their goal is simply to prepare the kid for a group, and they may have to work with the kid a couple of weeks to achieve this goal.

The port of entry classroom could also be a half-day, or part day program (two hours in the morning).

Depending on the number of classrooms, and amount of time required, the port of entry classroom may be very economical of dealing with the problems. In some cases, it would be more economical if we were thinking about only a few kids each year. A different format would be more appropriate for the floating aide or teacher. A teacher has a part-time assignment (perhaps during the afternoon) of working with incoming students in various classrooms. If no kids have come in, the teacher works with individual students.

If there are incoming kids who must be placed, the teacher goes to work with him or her during the afternoon or part of the afternoon.

In the remedial remediation is needed if the teachers are to be efficient. A classroom teacher can spend a lot of time working with an incoming student only to find that many other students in the classroom have been neglected. And, unfortunately, the person who prepares the incoming student for a group must do it properly. I would also like to see software developed with included programs to assist with such children.

Software instruction could be much more idiocentric than cassette tapes, based on some of the possibilities you have reported in the D.I. News. However, tape recorders and language master machines are more available than computers so I feel there is still a need for lessons for these machines.

Many of us in Knoxville want to thank the authors of D.I. Programs for their work producing programs that are effective. Since we have economic and staffing problems, I am hoping that someone can help us use our machines to back up our efforts.

Sincerely,
Shirley Johnson
Supervisor
Elementary Special Education

—Dear Ziggy—

Dear Ziggy:

I supervise many elementary special education teachers who are very enthusiastic about D.I. Could any information of their effectiveness with handicapped learners be found elsewhere?

There are problems, however, trying to fit children, who enter the special education program after the year begins, into existing instructional groups. Where placement tests and teacher judgment indicate they need skills the group has mastered, the teacher’s schedule usually does not allow forming additional groups. In addition, the teacher is usually the only one using D.I. in the building, so that a more appropriate group cannot be found elsewhere.

At times teachers have included new children in existing groups and have found after 2-3 weeks they do well. All would like to do more “catch up” tutoring with new children, but with huge caseloads this is difficult.

I am wondering if anyone has developed formats for cassette tape or language master lessons that teach some of the skills such as a - an discrimination, sentence or rule repetition; long vs. short vowel patterns. It seems these, if done using sound teaching strategies that include careful movement from the source of the teaching to the learner, could help bring new children, or other lower performers in a group to who tell to slow the group’s progress.

If done properly, I would also like to see software developed and included with programs to assist with such children.

Software instruction could be much more idiocentric than cassette tapes, based on some of the possibilities you have reported in the D.I. News. However, tape recorders and language master machines are more available than computers so I feel there is still a need for lessons for these machines.

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Sincerely,
Shirley Johnson
Elementary Special Education

Exclusions

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From DIRECT INSTRUCTION NEWS, SPRING, 1985
A College Reading Program with DI Components

By Robert M.O. Taylor, Judy Lamberti, and Patrick M. Flynn
University of Arkansas at Monticello

In the fall of 1983, the University of Arkansas at Monticello, like many other colleges and universities in the state, region, and nation were faced with the problem of declining examination scores. In addition, a large proportion of first-time freshmen were entering with academic deficiencies. One of the foremost deficiencies of the freshman class of 1983 at UAM was reading.

The Problem

The small campus of the University of Arkansas System, is located in the rural southeastern region of Arkansas. The diploma completion rates of many of the students on the Arkansas bank of the Mississippi River. The history and culture of the aged personal advancement for many of the dilemma the University faced. Traditionally, education has not been afforded much of an importance in other parts of the country. Education for much of the population was not emphasized in the last several decades. Educational opportunities for both blacks and whites were limited. Further, the population was increasing and the limited availability of education, may be found in the unique history and culture of the region, more than 70% of the freshman class indicate that they are first generation, they were among the first in their families to attend college. Their parents having little, if any, positive experience of having attended. Their parents are not able to assist their sons and daughters in preparing for and dealing with college life.

The University provides an important service for the region in that it has an open admissions policy. A high school diploma is the only admissions criteria. This policy has assured educational opportunities and encouragement for those who might not otherwise have attended college. Unfortunately, it has also given rise to the misconception that he could not meet the demands of college as is evidenced by the dropout rate. UAM averages a 25% dropout rate for its freshman class at the end of the first term. The average freshman dropout rate for the junior year institutions is 35%. With no junior colleges in the region, UAM freshmen are in many ways more like junior college freshmen (freshmen students). Still, the average dropout rate for freshmen in junior college is only 40%, which is well below UAM's 25%.

One significant contributing factor is the difference between the reading ability of many students and the level of reading ability required in most entry level classes. A study of probability and test taken at UAM revealed that instructors of freshmen courses use textbooks written at the 13th or college freshman level; with, however, the range being from grades 11 to 15. A high proportion of freshmen served by UAM do not have the ability to read at these levels of difficulty.

The reading difficulties became particularly apparent when testing of incoming freshmen was instituted in the fall of 1983. The Nelson-Denny Reading Test (Brown, Bennett, & Elona, 1981) yielded average grade equivalent scores of 8.8 and 8.2 on Vocabulary and Comprehension respectively. Analysis of the results suggested that only half of the entering students were seriously weak in reading skills. With the existing federally-funded Learning Development Center (LDCC) filled to capacity, many students were left without. Recognizing the need for an acceptable level of reading proficiency, the Vice Chancellor for Academic Affairs created reading skill classes for the 60 over low and LDC ineligible students. UAM had determined that the program was going to try to offer its students a more realistic opportunity for higher education. That being the case, there was only a stoppage measure until a more comprehensive reading program could be developed.

The Solution

The administration, not feeling comfortable with the teaching of the reading, asked two of its professors in the Department of Education to look into the matter. Members had, the total of ten years experience in the teaching and supervision of reading and work with Southern rural and disadvantaged populations. Ironically, their backgrounds in methodology were somewhat different, one from a traditional instruction background and one from a more psycholinguistic background. Surprisingly, they found themselves in agreement in terms of goals for the college students.

The result of their cooperation, a university-wide committee was charged with the task of planning a feasible college reading program. The program, it representing such diverse areas as literacy and library, was a rare example of cooperation between faculty and other thinking that can be so difficult to achieve through committee effort. The result was a college reading program that was revolutionary in its design, but sound in its rationale. Realizing the diverse needs of the students, an efficient, effective, and flexible program was developed that would help students develop the skills necessary for success in reading skills that accept "level of reading proficiency.

This involved developing a comprehensive, three-tiered college reading program. The lowest level was designed for students with severe basic reading deficiencies in the areas of word recognition and comprehension. Direct Instruction appeared as an appropriate approach for these students (see Herr, 1964, for a description of another college program). Direct Instruction on the Reading Readiness Test (Riverside Publishing Co., 1961) diagnostic test to determine their specific needs. Based on the results, students were then placed into three of the three service levels. Students particularly weak in the Vocabulary, Literal Comprehension, and Structural Analysis subsists or in Total Comprehension were placed in the lowest level. Students relatively strong on the Comprehension subtests and on Structural Analysis, but who showed weaknesses in Study Skills, were placed in the top subtest. All others, with miscellaneous weaknesses, were placed in the middle subtest.

Corrective Reading

Students in the lowest subsection were then tested with the Corrective Reading Program Placement Test. For the forty-four students, results were mixed (see Table 1).

Table 1. CRP Placement Testing Results

<table>
<thead>
<tr>
<th>CRP</th>
<th>Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>B1 - C2</td>
</tr>
<tr>
<td>B1</td>
<td>B1 - D3</td>
</tr>
<tr>
<td>C1</td>
<td>C1 - E1</td>
</tr>
</tbody>
</table>

The informed reader may have recognized an organizational dilemma. In each of the three classes at this lowest level the reading program we needed to begin the year with the Decoding Strand while the Comprehension strand in a 50 minute period five days a week. Also, as expected, not everyone in every class participated in each subsection. At times, there was not a way to form more than one group per class. The university schedule provided no alternative for students from one time period to another essentially impossible.

As a result of these problems, before the next term, four sections in Decoding C, Section 1. For the next two weeks, these classes worked in a Decoding only. This was to give both instructor and students a chance to orient themselves to the program, without other complications. This also gave us an opportunity to observe the progress of those who did not place at the C1 level of Decoding. At first, only 12 students placed below C1. Students who came into the term late or had been absent for testing had a tendency to be weak in Decoding. If we had known initially that 19 students had not placed in Decoding, C, we might have tried another solution. Nevertheless, at the end of this two-week period only two students, both placing at B1, seemed to have had noticeable difficulties. The instructor was trying hard and were improving, suggesting that perhaps they had made progress in the section exhibited during placement testing.

After the first two weeks, two of the four subsections started the Comprehension Strand at level B2 on alternate days. We hoped that while providing for more students’ tasks for the students and their instructor, this would not compromise either of the strands by allowing too much time without re-vision. The other two subsections continued only in Decoding for the next few weeks where the program was revised and re-taught that time, since no such efforts from alternative strands were observed and lower placing students did not seem suffering, the other two subsections also began alternating Decoding and Comprehension.

Another concern about our approach for each level program had to do with how students would feel about working with material that is used with elementary students and has, in addition, oral group responses. But as our instructor for these sections told us, "I really好像 to enjoy it. I can’t understand it for the life of
A vocabulary list of some sixty words was developed. Some of the words differed only in vowel sound (front, bat, bat), some in consonant sound (zil, sh, fly, fly), some were similar (days of the week), and others were quite dissimilar (the subjects’ names). The initial participants in the study were Millie Schrader, Laurie Skillman, and Linda Youngman; their names were chosen randomly from a list and served as subject assignments. The training procedure was identical to the one described for the child with the small microphone, worn on a suspenders. Each subject was trained using a microphone amplifier on one side of the belt and a battery pack on the other side. The device was powered by a battery pack, which was connected and disconnected by means of a small switch. The battery pack was readily plugged into a battery charger. Battery life is about six hours, which is sufficient for a school day. Julie frequently wears the unit home after school and on weekends; a spare battery pack is carried with her. The unit has proved to be unexpectedly durable in use and, so far, has not required service. No significant equipment problems have occurred, and only minor repairs have been required. The unit has been incorporated to further increase reliability.

The wearable vibrotactile vocoder has been developed by Dr. Mark R. Brooks and Dr. Donna J. Brooks of Logopedics will proceed with the construction of thirty additional units for distribution to the National Palliative Care Program, and for evaluative programs at the Wichita Public Schools, the University of Kansas Medical Center’s Children’s Hospital, the Child Developmental Center, the Institute for the Deaf in St. Louis, and the Moore Health Center, Kansas City. With a relatively large number of units being subjected to evaluative research, we expect that the acceptance and use of the vibrotactile vocoder either as a speech therapy tool or as a diagnostic auditory prosthesis for severely and profoundly deaf children will become widespread.

References
DI in Tuscaloosa

Continued from Page 1

show off. To see poverty-level preschoolers reading better than a group of third-graders who stopped the talk that poverty-level kids could not learn to read and it made them finally unac-

Two other events helped to legitimize the Distar Reading program in the upper middle class, that is, at the YMCA. Both events involved the middle class, better educated, and more vocal members of the community.

The Tuscaloosa Junior League consists primarily of mothers who, as part of their membership requirements, do voluntary work for the community. From 1977 until 1981, 4 to 5 different women served as reading aides in School A until it eventually closed in 1981. They received an orientation to DI philosophy and methodology each Fall, and since several of them were former teachers, some actually attended summer training sessions and learned to teach the pro-

The summer tutorial at the YMCA lasted for a couple weeks. Many of the poor readers and their parents were the children of Junior League members. Since Distar and Corrective Reading were successful with these and other paying-for-service youngsters, some respected members of the city now knew about DI and what we could do. Some articles about the YMCA program appeared in the local newspaper and promoted Roberto to contrast DI with traditional reading methods. Through these reports, the reputation of being a unique, but respectable program.

The Compensatory Schools

From 1977 to 1980, DI spread to other schools for these reasons:

1. Central office administrators allowed it to happen. They bought into instructional kits for interested teachers and eventually Roberto spent half of his time helping others implement programs.

2. The time was right: Accountability was in the air. Programs that worked were needed. Teachers wanted something that worked.

3. DI in-service training lasted for two weeks—not just a day or two—which allowed time for teachers to learn the

Vocoder

Continued from Page 4

Robertas was appointed as the Com-

Continued from Page 6

Training and Supervision

In the early years, from 1976 to 1978 at School A, training and supervising went smoothly. Congress had no reading workshops. Working directly in the teacher's classroom, Robertas would do the training and the teacher would teach, and gradually that person would take over. With tough questions, ambiguous formats or delivery arose, Robertas called Oregon. One first grade teacher had problems with class control and behavior management before DI and these continued after DI. Because she did not learn to implement the program effectively, Robertas had to reform her. The other seven teachers did receive the training. Some of the teachers gave Robertas an encouraging hand in training and supervising.

The last workshop in 1978, at Paul's preschool, ran all morning for two weeks. It became the framework for each summer workshop conducted since then. A key feature was the attempts by teachers to teach various groups of preschoolers. Not surprisingly, the trainers contrasted their ineptitudes at teaching infants (or the like) to teachers trained in sped and pre-K, and the latter often gave Robertas an encouraging hand in training and supervising.
next day's formats. When time permitted, the origins and current trends of DI philosophy and research were introduced. Engelmann's (1975) Your Child Can Succeed was read and discussed as well as the various programs that were part of the Follow-Through project. DI was also contrasted with traditional approaches at every opportunity.

The first few workshops were small attracting 8 to 10 curious participants. By 1980, 20 showed up. These consisted primarily of dedicated teachers who came voluntarily after having observed DI at the "A" School A, and/or Paul's preschool. They came because they could not bear to face another year of having failed to teach reading to low performers.

The then SRA representative serving Alabama (Jim Buskis) was providing supplies and leaving the training to local professionals rather than pushing rolls first and believing that one or two day "talk" workshop by an outsider would produce well-trained teachers. Alabama's community also came through on their promise to buy instructional kits for those opting to implement the program.

With the 1981 court order, making DI the program of choice for low performers, the number of workshops together with the size and composition of its participants changed. In addition to the two weeks, regularly scheduled workshops attracting 20 teachers, two more workshops were offered that summer. One was all day for one week, and the other (in Correctional Reading) ran all day for just two days. The attendance at the last 1981 workshops and the one in 1982 was now up to 30 to 40 participants. The program was made compulsory by their principals. Many of these teachers were holding part-time jobs, and included three unwinding to begin, no matter what the program, as well as those hostile to DI. When 20 teachers participated, things went smoothly and more practice was possible. Subgroups of 4 to 5 teachers could take turns individually instructing 3 to 7 children which matched the number the new teachers would later teach in their own classrooms. Having 40 trainers made the number of subgroups inordinately large, probably too large, and reduced the number of kids per group to 2 to 3. Fortunately, Roberta was allowing several teacher-aides to help with the skill-checks and teacher supervision, but the quality of these more recent workshops suffered.

The 1981 court order also affected Roberta's supervisory role in the schools. Before The Order, the DI teachers readily accepted Roberta as the local DI reading expert; they welcomed suggestions about better firing-up procedures, more careful monitoring, changes in group size or composition, and other major DI components. Frequent evening phone calls had teachers asking her for advice and inviting her into their classrooms. Following The Order, when DI was absorbed into the system and managed like other programs, Roberta became part of the school's bureaucracy. She could not easily enter the classroom of a weak teacher (the ones who were usually hostile at the DI workshops or got limited practice), unless requested by a principal or that teacher. And, if so invited, a traditional supervisory model was sometimes encountered—it quietly away from the teaching action and often suggested well after the lesson (when the damage of poor teaching skills or feelings of distortions had been well-practiced).

Findings and Interpretations

Figure 1 shows the percentage of third grade cohorts from each school who placed in the lowest 3 stanines on the total reading section of the standardized reading achievement test given during the Spring of each year.

Combining percentages across the Pre-Distarr years (open dots), the mean weighted percentages for the respective schools are as follows (the number of third graders tested is in parentheses): School A, 62.3% (127); School B, 79.0% (385); School C, 63.8% (467); School D, 61.0% (754); School E, 66.7% (487). Comparable mean weighted percentages and the associated total number of third graders were 66.9% (716) in 1981 for the set of studies. The DI results were highly reliable (p < 0.001), as evaluated by a procedure that tests for differences between two uncorrelated proportions (Guilford, 1965, p. 185-186).

At the beginning of the next school year, a group of DI teachers, similar reductions were not likely to occur at the Non-DI schools. Only when DI was firmly implemented in a former Non-DI school, did the lowest 3 stanine percentages plummet. School E, only a few miles from Schools B and C, can be considered a control school. It never had DI and it never did rid itself of its large population of nonreaders.

The sequential nature in which DI was tested during the DI years for each school, when its third graders had an instructional history of two-to-three years of Distarr Reading are: School A, 33.8% (218); School B, 41.1% (231); School C, 25.6% (342); and School D, 30.3% (138). Relatively speaking, these values represent an incredible reduction in the percentage of initially low-performing third graders falling in the bottom 3 stanines compared to the percentages reported for the years prior to the introduction of Distarr Reading. For Schools, A, B, C, and D, mean percentage differences between the pre-Distarr years versus post-Distarr years were highly reliable (p < 0.001), as evaluated by a procedure that tests for differences between two uncorrelated proportions (Guilford, 1965, p. 185-186).

Discussion

The good news is that school personnel now acknowledge that illiteracy can be reduced in low performers through DI. This has led to its use in all of the city's elementary and secondary schools (although, almost exclusively with hard-core students). The bad news is that there are hardly any upper graders who need to be remediated anymore by corrective Reading is heartwarming. Those who need remediation are mostly from out of town.

Alabama's summer workshops are full and over 200 teachers and several ad-
ministrators representing every grade level have attended them. They draw participants from around the State, and have developed a solid reputation for expounding the principles of DI and then moving forward to impart critical teaching skills in a thorough, practical manner. We like to think that the workshops have made the teachers better.

There is now a closely knit group of mutually supportive DI teachers, who, if the commercial programs were suddenly made taboo, would nonetheless continue with the DI delivery system and design their own formats. Many of them have frequently experienced personal insults in their own attempts to use and support DI. Once a couple of university education professors repeatedly put down DI programs and the teachers who used them, without citing a shred of evidence or without ever consenting to see the programs in use. However, the results of this and other kinds of negativism were wonderful! The scripts became the glue which united DI teachers and spurred them on. Incidentally, the anti-DI professors have left the University, and although DI is still not taught in the Education Department, there is a move afoot to send students to Paul's preschool for training and collaborative research.)

The city system has openly invited out-of-towners to see its DI program, and there are DI programs getting started in other locales. There are probably enough of us to hold a state wide conference on DI next year.

Now, the not so good news. True, DI is everywhere in Tuscaloosa but, because it has gotten so big and has been absorbed by the school system, we worry about quality control. The high standards of teacher training, program implementation, and monitoring that Roberta set forth in the pre-court order days have begun to slip, because others less knowledgeable in these matters are increasingly taking over these responsibilities and are making instructional decisions about high-risk children. Administrators at building principals, now given the responsibility for the lowest performers, still wish to wrap themselves in their cloaks of curriculum uniformity and exclusion as they did previously as managers of schools catering to average and above average children. They continue to yearn for signs of the old normalcy; school plays, a chorus, lots of student art displayed and so forth. Even though logic and data suggest that high-risk children should spend more time in critical academic content areas, this curriculum priority is lessening in the pressure to normalize it—especially if every child, no matter how weak in language and reading skills, to social studies, art, music, and P.E.

We worry when DI children showing the first spark of progress are upgraded and planted into basal packages or shuffled into more advanced DI groups when evidence suggests they should stay where they are. We worry when DI teachers, with a class size of 30, are reluctant to have more than three reading groups, and some reading groups swell to 10-12 children. We worry when DI teachers needlessly of frequent monitoring by knowledgeable DI implementers are instead rarely checked or checked ineffectively by individuals using traditional supervised monitoring procedures.

When on-site administrators, who have never taught DI and are unfamiliar with the sequence of skills programmed, are placed in charge, they are caught in the dilemma of being instructional leaders of their school without the ability to give specific and adequate DI instruction. They walk a fine line. If they dispose or ignore data-based decisions offered by their more experienced teaching staff, they infuriate these teachers and alienation results. If they admit ignorance and ask central office for assistance, it may be interpreted as a sign of weakness. Some principals would rather preserve the appearance of an untoucheable effective faculty than to invite “outsiders,” like Roberta, to get down to the serious business of helping teachers improve the kids’ performances.

Supervisors are not interacting as much with Roberta about DI instruction in those schools not assigned to her. These individuals are allowed to do as they please, and since the principals in these other schools don’t know DI, no one is monitoring supervision. Kindergarten teachers of high risk children in these and other schools are beginning to use the language program, but they are relatively unsupervised. If DI is Reading is done there, it is at the discretion of the teacher.

Guidelines For The Future

After having been at it for eight years, perhaps the following 10 suggestions should be considered by those in a position to start using DI programs in their community:

1. Start small. Attract smart, eager and caring teachers who want something new.
2. Train well. Supervise closely. Make sure the program is done right. The teacher must be successful.
3. Have money and support. No matter how good the program is, if administrators don’t want something, they won’t try it even if you have it.
4. Come to administration with proof of effectiveness. Data alone may not help if there is bias or no interest, but it does help if people are openminded.
5. Show a success model. Principals can use Paul’s facility to see at-risk preschooler’s reading. Some visited the Dayton Follow Through Program in 1980. Don’t let outsiders observe the early lessons in which the kids are struggling. Show polished performance.
6. Don’t try to shove DI down throats. If you do, resentment can be manifested in sabotage so the program won’t work. This can be seen as not spending enough time on a lesson, forming groups that are too big or of poor composition and distorting the presentation.
7. Maintain quality control. Be visible, stay in the schools, and maintain teaching and learning standards.
8. Have parent and community support. Parents asking that their children be removed from a program carries a lot of weight with the principal.
9. Be willing to be an outsider. If change requires discretion, be prepared to dissent and suffer the consequences which include ostracism, nasty gossip and name calling, and distortion of your efforts.
10. Finally, if you’re successful, be prepared to have your achievements claimed to belong to the poor kids that. After all, they took the risks. You must keep plugging away at these people to maintain your influence, there’s always a chance that your efforts will be absorbed into their bureaucratic methods and lose their effectiveness.

References

Continued on Page 11

STUDY STRATEGIES
A Metacognitive Approach
- Skimming
- Summarizing
- Note Taking
- Outlining
- * Direct Instruction in strategy steps*
- * Charting of progress in speed and accuracy*
- * Application of strategies to content textbooks*
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Figure 2. Percentage of fourth graders in different stanine intervals on the California Achievement Test given in 1979. Only in School A was Distan Reading taught in grades 1 to 3. Percentages of free or reduced lunches are reported in parentheses by school.
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Teacher Net Computer Feedback Tested

By Marilyn Stepanoski and Donald J. B. Curry, University of Oregon

Rosemberg (1983) reported that students spend about 30% of their school time (allocated time) and 50% to 75% of their allocated time in independent seatwork. He found that student engagement during seatwork was lower than during teacher-led instruction and usually did not exceed 76%. In short, students spend a major portion of their school day working alone, a situation associated with relatively low levels of engagement.

Student accountability for work done independently has been addressed only minimally in the research literature (Brophy & Good, in press).

The purpose of the present study was to investigate the effectiveness of two procedures for monitoring student performance and providing academic feedback in independent seatwork. The independent seatwork was performed by elementary and secondary school students.

**Method**

**Students and Setting**

Seven remedial mathematics students, who were identified by their teachers as having previously mentioned the skill area (arithmetic operations with whole numbers) as part of their instruction, were required to complete the task. Each student was assigned to a group and received individual instruction on arithmetic operations with whole numbers. The students were selected from the third grade of a local elementary school. The instruction was given in small groups, with each group consisting of three to five students. The instruction was designed to improve the students' understanding of arithmetic operations with whole numbers. The instruction included the use of visual aids, such as number lines and manipulatives, to help the students understand the concepts.

**Data Collection**

The data collection methods included the following:

1. **Individual Observation:** The teacher observed each student individually and recorded their performance on a checklist. The checklist included questions about the student's understanding of the concepts and their ability to apply them in problem-solving situations.
2. **Group Observation:** The teacher observed the group as a whole and recorded their performance on a group checklist. The checklist included questions about the group's understanding of the concepts and their ability to work together as a team.
3. **Self-Reporting:** Each student was asked to complete a self-report worksheet, which included questions about their understanding of the concepts and their ability to apply them in problem-solving situations.

**Results**

The results of the study showed that the students who received individual instruction made significant improvements in their understanding of arithmetic operations with whole numbers. The students who received group instruction made moderate improvements, while the students who received self-report instruction made minimal improvements.

**Conclusion**

The results of the study suggest that individual instruction is the most effective method for improving students' understanding of arithmetic operations with whole numbers. The results also indicate that group instruction can be effective, but it is less effective than individual instruction. Self-report instruction is the least effective method for improving students' understanding of arithmetic operations with whole numbers.

---

**Table 1**

<table>
<thead>
<tr>
<th>Skill Area</th>
<th>Problem Type Example</th>
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<tbody>
<tr>
<td>Multiplication</td>
<td>One digit times two digit factor, horizontal 35 x 9</td>
</tr>
<tr>
<td>Multiplication</td>
<td>Two digits times two digit factor, vertical 37 x 25</td>
</tr>
<tr>
<td>Division</td>
<td>One digit division, two or three digit Dividend with remainder 5 ÷ 16</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>Addition/subtraction classification problems Eight men are in the store. Three women are in the store. How many people are in the store?</td>
</tr>
</tbody>
</table>
number missed in the box at the top of your paper.
3. I'll read your names and the total number you missed.

During the remainder of each three-minute feedback session, the teacher
decided which skill areas required reteaching and then provided the
retraining.

Diagnosis and remediation. Two im-
portant points on diagnosis and
treatment were critical in this study:
(1) although diagnosis and retraining
were provided during each three-minute
feedback period, it was assumed that
more time would be available in the
computer-monitored (Teacher Net) con-
dition, (2) after errors were recorded by
students in the Teacher Net condition,
the teacher did not have specific infor-
mation on the cause of errors and would
retrain for appropriate strategies for
problem type with high error rates.

The academic feedback procedures for
this study closely paralleled procedures
for diagnosing and remediating errors that appear in Direct Instruction

Math teacher training. The experimental
teacher for this study was a doctoral stu-
dent in the Department of Special
Education at the University of Oregon.
The teacher had previous teaching
experience and received training in the ex-
perimental procedures prior to the ex-
periment. The teacher was trained on
(a) leading students in correcting their
own worksheets, (b) using the computer-
monitored feedback system, (c) diagnosing math error patterns, and (d) retraining math skills.

Measures
Teacher behaviors. Observers took
data on the number of minutes spent on
retraining during the three-minute feed-
back period. A teacher observation
checklist was used to ensure that the
experimental procedures were being im-
plemented as intended. Before the in-
dependent seatwork stage, observers
focused on teacher directions and mater-
ials. During the feedback stage, observers
focused on scor-
ing, diagnosis, and retraining pro-
cedures. Also, lessons were audio-
taped and assessed by a trained observer
to ensure consistency in the implementa-
tion of the experimental procedures.

During the study, it was necessary to
make only slight modifications in the
experimental procedures.

Daily performance data. Daily perfor-
manence data for each subject as well as
mean performance for the group were
plotted for the percentage of math prob-
lems attempted that were worked cor-
rectly, Secondary analyses were per-
formed on accuracy of scoring.

Maintenance test. This was a 24-item test
that was administered one week

Teacher Net Computer Feedback Test

Table 2

Consumer Satisfaction Questionnaire

<table>
<thead>
<tr>
<th>Name</th>
<th>A Little</th>
<th>A Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much did you like working with the computer?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. How much did you like working with the worksheets only?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. How much did you learn working with the computer?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. How much did you learn working without the computer?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. How much more would you like to work with the computer?</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. How much more would you like to work without the computer?</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Figure 1. Time spent in retraining as a function of two monitoring procedures.

A six-item consumer satisfaction ques-
tionnaire (Table 2) was developed to
allow the students to rate, on a scale
from 1 to 3, their opinions about the
monitoring and feedback procedures.
All students were asked to complete this
questionnaire two weeks following ter-
mination of the study.

Results and Discussion

Teaching Time

Figure 1 shows the amount of retraining
time spent in each phase of
the experiment. The observed changes
are represented in terms of the number
of seconds of retraining in a three-
minute feedback period. The mean
number of seconds in retraining for the
Teacher-Net sessions was 128 seconds (2
minutes, 8 seconds); the mean number of
seconds in retraining for the tradi-
tional sessions was 42 seconds. As
predicted, the amount of retraining time
in the computer-monitored phases was
markedly higher than in the traditional
phases.

Daily Student Performance

Group performance for percent of
items attempted that were correct is
presented in Figure 2 and Table 3. Visual
inspection of Figure 2 shows that when
only review material was used, the
accuracy of students in the Teacher
Net group was significantly higher (p = .05).

The maintenance test results must be
interpreted with caution. If the Teacher
Net worksheets were easier than the
Traditional worksheets and the mainte-
nance test was constructed similarly, the
difference in mean group favoring
Teacher Net may simply reflect a differ-
ence in content difficulty.

Accuracy in Scoring

During the Traditional condition,
(teacher-directed, student-scoring),
the mean reliability for the group
accuracy data was .967 with a range of
95.6% to 99.2%. Reliability between the
teacher-scored worksheets and the
computer-scored was 96.7% with a range of
93 to 99.9%. It seems that errors are no
more likely to occur in delayed responses
on a keypad than in listening to a teacher
read answers and marking wrong responses.

10 DIRECT INSTRUCTION NEWS, SPRING, 1985
Table 3

<table>
<thead>
<tr>
<th>Subject</th>
<th>A</th>
<th>B</th>
<th>A1</th>
<th>B1</th>
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<td>2</td>
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<td>87</td>
<td>86</td>
<td>76</td>
<td>59</td>
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<tr>
<td>Group Mean</td>
<td>82</td>
<td>76.7</td>
<td>53.4</td>
<td>62.2</td>
<td>66.2</td>
<td>76.5</td>
</tr>
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</table>

*Indicates student moved and was dropped from study.

Table 5

<table>
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<td>2</td>
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<td>3</td>
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<td>6</td>
<td>67</td>
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<tr>
<td>7</td>
<td>67</td>
</tr>
<tr>
<td>Mean</td>
<td>58</td>
</tr>
</tbody>
</table>

*Student moved

Student Attitudes toward Instruction

On the consumer satisfaction questionnaire, the students indicated that they felt they had learned equally from both treatment conditions and that they did not feel differently about working with or without the computer. It may be that the overall mastery learning structure of the instruction (i.e., specific interactions, timed response, reinforcement) employed in this study accounted for the students' attitudes. Several students' responses during the course of the study further indicated satisfaction with the instructional procedures in general; "I didn't miss anything in the school assembly by being here" or "Can't you spend more time on teaching?" (extend the three-minute reteaching time).

This last comment about teaching time may reveal a limitation of the study, at least with respect to the Teacher Net condition. Although reteaching time during Teacher Net phases was markedly higher than during Traditional phases, the reteaching time rarely exceeded two minutes and perhaps was too limited to provide an effective remediation.

The scoring, diagnosis, and maintenance of student independent work at the classroom level is a complex undertaking. Preparation of diagnostic summaries as well as routine scoring are costly in terms of the time needed to perform them and the attention diverted from the direct delivery of instruction to students. Without rapid access to student performance data, teachers may find it difficult to continuously monitor student progress, to diagnose skill deficits and to provide reteaching. A computer-monitoring system, such as Teacher Net, can perform these functions and relieve teachers of much paper work so that they can concentrate on the more substantive task of efficient, effective instruction. The results of the study show that computer monitoring increases the time the teacher has available for remediation.

The full development and impact of how technological innovations can increase student performance, however, imply the need for further research. The classroom setting is a complex environment requiring more extensive research for developing effective and efficient technologies such as Teacher Net. If Teacher Net's potential utility is realized, many additional uses need to be studied in the future, for example, in testing, in getting student feedback during a lecture, in reading comprehension, etc.

References


College Reading

Continued from Page 3

one of her students that began with an "ugly" attitude stated that he loves reading out loud now even though he used to hate it. Another student with speech impediment now consistently volunteers to read first. These examples seem to be effective in raising at least of attitudes at the end of the first ten weeks of instruction.

There is a feeling that the students in the lower level are making a great effort to increase their reading skills and the Corrective Reading Program is allowing them to experience success. Whether this balance between experiencing success, but making reasonable progress toward the goal of entry level skills for college will prevail remains to be seen. The goal between these students' present level and the goal is a wide one. The successful crossing will depend on student motivation, intelligently administered and faculty's patience and support; and effective and efficient instruction with strong leadership of the College Reading Program. The obstacles may be too great. But we are willing to make the effort and realize that even if we cannot get these students to their ultimate goal, we have improved their reading ability and thus have provided a more realistic opportunity for higher education.

References


Tuscaloosa

Continued from Page 7


References

References


References

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MICROCOMPUTERS IN TEACHER EDUCATION

Computers and Writing

Editor's note. This is the second part of a two part series on Computers and Writing by Samuel K. Miller. Part 1 covered history. Part 2 covers the microcomputer era.

Research and Popular Beliefs About the Use of Computers

During the past five years a number of articles on the computer's potential for improving students' writing skills have appeared in journals and magazines. Uses of the computer for this purpose can be classified under four general categories: (1) computer-prompted idea generation, (2) text analysis, (3) computer-assisted instruction, and (4) word processing. The following sections summarize the research and popular beliefs about these applications of computer technology.

Computer-Prompted Idea Generation

Several researchers (Burns & Culp 1980, Woodruff, Berette & Scardamalia 1981) have developed and tested interactive computer programs to assist students in composition. The programs generally use the computer to develop ideas or an outline for writing by presenting a series of questions or "prompts." Woodruff, Berette, and Scardamalia's program includes prompts such as "Do you have an opinion on this topic?" and "Have you told the reader how you knew about this reason?" Results from this study indicate that the students found the programs interesting and helpful; however, frequent intervention by the computer tended to slow the composition process and the quality of the students' writing did not noticeably improve.

Burns (1984) devised computer programs that utilized questioning strategies based on classical rhetoric or the art of constructing persuasive arguments. He reported that

"in the experiments using these programs, students had more ideas about their topics, used the computer more as a control tool in the planning stage, and did not use the computer assistance in writing. The computer program did not significantly influence the quality of the students' composition" (p. 16).

Research about computer-prompted writing is limited; however, the belief that computers can successfully assist students in developing topics about which to write has created a market for a number of commercial software programs. Some of the more popular programs at the elementary and middle school levels are described below.

STORY MAKER, a program published by Bell, Berenstain, and Newman, Inc. (1981), engages students in a creative story writing exercise by allowing them to select options from story segments provided by the program.

PLANNER is one of six different programs for use with the QUIILL writing program published by D.C. Heath (1984). The program helps students take notes, write their ideas, and organize their thoughts.

STORY TREE, published by Scholastic Inc. (1984), is a creative writing program that allows students to create stories with multiple endings. The program presents a story tree to students and prompts them to help create mystery or adventure stories that contain chance events and ends to a variety of endings.

The limited research indicates that computer-prompted idea generation does not necessarily promote better writing; however, such programs can imitate many of the prewriting "creatures" employed by instructors. Routine, summarized below by Burns (1984), will undoubtedly be refined as researchers continue to apply computer technology to writing instruction.

1. A program can ask the question.
2. A program can clarify the question.
3. Good software can define the dimensions of the question.
4. The software can call attention to the essay's purpose.
5. It can purposefully distract (for information's sake).
6. It can rephrase the question.
7. It can create random metaphors.
8. Invention programs can offer research questions.
9. A program can print a copy of the dialogue so a student can later evaluate the answers" (p. 22).

Computer Text Analysis

Can computer programs be developed that will criticize and correct student essays? Hertz (1985) and Lawler (1984) have investigated the use of text analysis programs that assist writers and their teachers. The present work in computer text analysis is in the developmental stage, and virtually no research exists about such programs.

Sophisticated text analysis programs such as WRITERS' WORKBENCH developed at Bell Laboratories (1980) and IBM's EPISTLE (1980) program have been used primarily with adult writers. WRITERS' WORKBENCH critiques writing on the basis of rules derived from two writing style guides, while the EPISTLE program searches for fourteen common writing errors that it has been programmed to recognize. Hertz (1985) pointed out deficits in the performance of both programs. Discussing the EPISTLE program first, and the WRITERS' WORKBENCH next. Hertz noted:

Continued on Page 13
Computers and Writing

Continued from Page 12

"Though its designers would eventually like to think of their machine what a passage it has just read is about, they have had their hands full so far just trying to get the machine to read the syntactic analysis to work. (p. 62).

The editors of Discovery Magazine had the clever idea awhile back of putting a computer to work reading a famous novel. The Address and the first paragraph of The Tale of Two Cities. The WORKBENCH was not pleased. It ordered Lincoln to shorten his sentences—and an average of 26 words in length—to 15. "Your document," the WORKBENCH advised him, "contains many more complex sentences than is common for this type of text." But Lincoln got off lightly compared to Dickens, whose sentences proved to be 100% complex" (p. 63).

Hertz and other experts in the field believe that using a computer to critique writing may be impractical because many writing tasks cannot be reduced to a finite number of widely accepted rules. Programming a computer to check written work for spelling and grammatical errors is a fairly straightforward task and is a number of programs available for these purposes. Such programs may, in fact, allow teachers to spend more time monitoring and guiding students' writing instead of the mechanical errors. However, effective programs require a great deal of careful planning and creativity and may never be perfected because nearly every effort to writing depends on subjective judgment.

Computer-Assisted Instruction

Instructional games, drill-and-practice, and tutorials are all forms of programs categorized as computer-assisted instruction (CAI). Rubin (1983) examined descriptions of 317 language arts programs listed in a comprehensive software catalog and reported that the majority of CAI programs for language arts focus on letter, word, or sentence themes. Like computer programs require students to manipulate text at the letter level (e.g., select the correct answer for a word) or at the sentence level (e.g., sort words into several sentences). Doyle (1983) and other experts in computer-assisted writing argue that such programs disallow.

"The carryover of these exercises is highly questionable. There are few software programs that retain the dignity and wholeness of the reading and writing process, and enhance the learning necessary to master this process" (p. 144).

Research about the instructional effectiveness of CAI and its potential for improving students' writing skills is limited. However, a recent report of the National Opinion Research Center suggests that "the number of methodologically sound studies that have attempted to compare computer-assisted instruction and traditional methods is rare and conclusive results are difficult to find" (p. 58). Kulik (cited in Emmett, 1983), in another comprehensive review of the major of CAI research, reported that the results of 250 out of 300 research projects were not discussed and results "were crippled methodological flaws" (p. 125).

However, the few well-designed studies that do exist indicate that CAI may have some potential for improving writing. If writing is viewed as the acquisition of discursive skills rather than as a comprehensive process. The literature suggests some general conclusions that can be drawn regarding the effectiveness of CAI in the learning process. These conclusions, drawn primarily from the work of Gleason (1981), Forman (1982), Keister in the use of word processing as an aid to writing instruction. Bradley (1982) investigated the use of word processing with sixth grade students to complete sentence combining tasks and reported that students: (1) completed the tasks with ease, (2) were motivated to write, and (3) were not seriously limited by a lack of typing skills.

Piper (1984) studied the use of word processing with fifth graders to complete sentence combining and expansion activities. The results of the study indicated that students who used a word processor improved in writing ability as measured by factors of writing maturity. Reports about the use of word processing with students are not consistently positive; however, the reports primarily consist of case studies rather than experimental research. Examples of such studies include reports that: (1) learning disabled students, age seven to nine, began working enthusiastically when allowed to use a word processor (Chapman & Wright, 1982); (2) college students appear to recall and retain their work more frequently when using a word processor (Levi, 1982; Doherty, Marcus & Blau, 1982; Schacht, 1982); and (2) language impaired children of all age groups improved to some degree on the use of a word processor linked to a speech synthesizer (Meyers, cited in Trosclair, 1982).

Hennig and Schacht (1981) reported that students write more with a word processor and have a better attitude toward writing, "but there is no clear cut evidence yet that students are writing better" (p. 9).

A review of the literature indicates that research about word processing and writing instruction is limited; however, there is no lack of opinion about the subject.

"I believe that the computer as writing instruments will bring about an opportunity to become more like adults, indeed like advanced professionals in their relationships with intellectual products and to themselves" (Papert, 1980, p. 31).

The computer helps with this whole process of adding and deleting information — a process that is a hump for young and old writers to get over. You can take your manuscript and really chew it up and out of the cover and the whole thing, and just burn the whole thing up without ruining the look of your printed page" (Graves, cited in Green 1984, p. 22).

"Because children learn according to their own needs and not according to a predetermined sequence of skills, instruction should not show improved performance. However, by asking students to print out copies of their work, they have some control over a period of time, the wonder of improved writing will become apparent" (Schwartz, 1983, p. 29).

Computers can make copy so beautiful that children become attracted to the formal, margins justified, etc. And now more and more programs are appearing to help the child with the punctuation errors, misspellings, and even improve style. Consequently, there is a danger of what I call "chomskescreen revision," the tendency to think that nice appearances cover up flaws in meaning, or that "facilitating changes are a substitute for changes in meaning" (Schwartz, 1982, p. 29).

Popular opinion about the use of computers in composition instruction has generally been directed at the beliefs listed below:

1. The use of computers in composition instruction should not focus on drills and exercises, but on improving spelling, grammar, etc. (Papert, 1980, Schwartz, 1983).
2. To facilitate the use of a word processor students should receive formal instruction in keyboarding (typing) (Papert, 1980, Schwartz, 1982).
3. The process approach to writing should be followed when using a word processor for composition instruction (Green, 1984; Rubin, 1983; Schwartz, 1982).
4. Students' success should emphasize the development of programs that lead students through important steps in the writing process (Rubin, 1983).
5. A word processing program for use with children should have a limit set number of commands (Bradley, 1982).

These beliefs, frequently mentioned in computer journals and magazines, help to explain why programs such as THE BANK STREET WRITER and QWIX have been well-received by educators. THE BANK STREET WRITER, published by Scholastic, Inc. (1982) is an easy-to-use word processing program that has been purchased by schools across the United States. QWIX, developed by D.E.C. (1986), is a set of microcomputer-based writing activities that encompasses all aspects of the writing process.

Summary

It is evident that research about teaching writing with a computer has not yet reached the stage when a valid algorithm exists for ensuring effective writing instruction with or without a computer. What is needed is an accumulation of opinion, theory, and developmental research predicates on educators' expertise with traditional writing instruction and programs written for large mainframe computers.

Researchers recognize that writing with a computer is technically different from writing on a typewriter with a pencil, pen, or typewriter. As recent developments in computer composition instruction will eventually alter the questions researchers ask about writing and even the definition of writing itself. Question of the future." Can results obtained from non-computer writing research be generalized to writing with a computer? Will students who receive composition instruction with microcomputers write as well as students who use mainframe computer? What does the future hold for the many difficult problems researchers will need to resolve in the future.

References


Bradley, V.N. Improving students' writing, microcomputers. Language Arts, 1982, 59(7), 626-634.


Emett, A. Ameritourist. It is likely that recent Personal Computers, 1983, 7(1), 56-57.


Gleason, G.T. Microcomputers in education: the Quest of an idea. "Can results obtained from non-computer writing research be generalized to writing with a computer? Will students who receive composition instruction with microcomputers write as well as students who use mainframe computer? What does the future hold for the many difficult problems researchers will need to resolve in the future.


Use of Computers to Aid the Handicapped

Personal Computers & Special Needs
By Frank G. Bowie
Published by Sybex, Inc.
Berkeley, CA, 1984

Personal Computers & Special Needs is a well written book by an individual who is bearing himcnself. Dr. Bowie is nationally recognized for his expertise on the uses of microcomputers for the disabled and uses the computer to successfully deal with many of his as own personal barriers. A major focus of this book deals with ways that the computer can enhance the opportunities of disabled people concerning employment, education, and independent living.

A unique feature of this book is that the author uses concrete examples to illustrate his points. Under the employment section, Bowie refers to an individual who is so paralyzed that he cannot even move his legs. This person is hired by the National Institute of Health (NIH) and works five hours each day, five days a week as a computer assistant. As a computer assistant, he is able to write and document computer programs for NIH through a Voice Data Entry System. The author sites several other examples of how computers have helped disabled individuals in employment.

One of the major comments made by these disabled people is that the computer takes away their traditional stereotypes and gives them an elevated identity.

Microcomputers in special education are fulfilling needs ranging from using Zygo switches as input peripherals, to help children with cerebral palsy communicate, to using LOGO to help children with learning disabilities attend to task. The microcomputer, for example, has opened avenues for dyslexic children who have previously been diagnosed as mentally retarded. Some of the important requirements in teaching disabled students are the large amounts of time, effort, and patience involved. The computer can patiently present a concept over and over, time after time.

In addition, the computer can expand a student's horizons which is vital to their education.

Independent living in the final way, Bowie talks about how the computer can enhance opportunities for disabled people. With the computer, a disabled person is capable or will be capable in the near future of such things as electronic banking, electronic shopping, retrieving and storing information, and handling other everyday tasks that otherwise would take an enormous amount of time or effort. There are information systems which disabled individuals living alone can patch into and get help with a wide variety of tasks.

There are, however, several problems related to the state of the art of microcomputers and their use for the disabled. There is a lack of hardware and software to meet the special needs of many disabled people. Additionally, whatever computers are there, it is usually not compatible with the user's computer. Voice synthesizers, for example, require large amounts of memory and they also cannot be used with copyrighted software. Bowie calls for those concerned for disabled users to shop around and make sure that the equipment being bought is compatible.

This book is written at the novice level and is aimed at friends, relatives and teachers of disabled people. This book should be useful to those who think the computer may be helpful for a friend, but are not familiar enough with them to know how they can be used. Bowie's book also gives a general overview of the uses of computers in special education and would be an important resource to anyone interested in this area. Prices and other purchase information of both hardware and software are also included.

Reviewed by Dan Boomer

Administrator's Briefing

School Improvement and the Planning Papers

By Stan Pathe, Principal
St. Alise School, Springfield, Oregon

School improvement is a complex and time-consuming process. It can often seem overwhelming when one confronts the realities of organizational dynamics and change processes. But systematic planning can make the process appear more logical and lead to outcomes that are more attainable. We take planning processes for granted in such complex matters as budget-making; they can serve us well in the complex endeavor of school improvement.

School improvement planning is perhaps best thought of as a long-range process of one year cycles building toward outcomes which may be three to five years away. That is, we should ask ourselves (and others), "What do we want our schools to be like in two, three, or five years?" and, given those outcomes which we agree, "What can we do this or next year to move toward those outcomes?" This latter question must then be followed up with such queries as, "What tasks will allow us to reach these year-end goals?", "Who is to be responsible for performing these tasks?", "By what date should these tasks be accomplished?", "How should these tasks be carried out?", and "What resources will be required to accomplish these tasks?". These questions would be addressed anew on at least an annual basis.

School improvement planning efforts should consider several elements. At St. Alise School, our school development efforts include: (1) an educational excellence plan, incorporating elements adopted from the professional literature and goals submitted by members of the school community; (2) a curriculum plan, including an implementation schedule for direct instruction programs, subject area guidelines taken from research findings (e.g., daily composition assignments), and computer integration recommendations; (3) a school-wide instructional plan, including time allocations for subjects by grade level, a master schedule, and grouping-placing guidelines; (4) an extracurricular plan, detailing how the basic curriculum is to be supplemented with after-school activities; (5) a school-wide code of conduct and discipline plan, including expectations of student conduct and positive and negative consequences; (6) staff performance plans for all employees, indicatign individuals' goals which enable organizational ac...
Teaching "Exceptions" to Rules to Learners with Handicaps

By Richard W. Albin
Robert H. Horner
Julie A. Williams
University of Oregon

Whether teaching academic subjects or community-based adaptive behaviors, teachers frequently find themselves teaching rules for performance. These rules describe the relationships between concepts and the behaviors that those conditions should control. Sometimes the rule is simple: "Cross when the walk signal is on."] Sometimes it is not so simple: "Cross when there are no oncoming vehicles or the walk signal is on within 15 seconds of the intersection in either direction, and it is safe to do so from a distance of the parallel street, no cars about to pull out from the curb, and traffic consists of only a few cars at the intersection." Because rules are one method of transferring or generalizing competence across situations, they have long been a focus of education. However, accompanying any effort aimed at teaching rules is the realization that there are frequently "exceptions" to rules. Exceptions may add complexity to daily life, but they complicate the process of good teaching.

This article describes how exceptions arise in community-based instruction, and it provides some guidelines we have applied in using direct instruction to teach exceptions to people with severe handicaps.

In academic subject areas teachers have students with severe handicaps who face teaching exceptions such as irregular symbols, tense letters, and unique spellings. For example, a teacher might have students with severe handicaps who are learning to read and write the word "walk." However, they are also learning to read and write exceptions as well, such as "walked" or "walking." The ability to teach both rules and exceptions is essential for students to be successful in life. This article describes some of the strategies we have used to teach rules and exceptions in community-based instruction. We also describe how we have adapted some of our community-based instruction strategies to teach exceptions in academic subject areas.

Planning Improvement

complishments: (7) a volunteer program, specifying how volunteers will be recruited, trained, and deployed to enhance the efforts of staff in serving students and parents; (8) an intervention training plan to develop the skills of both staff and volunteers; (9) a marketing and public relations plan, detailing how we will promote the mission of the school and enhance our working relationship with our constituents and the general public; and (10) an evaluation plan, describing how we will evaluate the various facets of our efforts.

The school improvement planning process will be as inclusive as possible. More involvement slows down the process but strengthens people's commitment to the process. Teachers, parents, administrators, boards, and students all have important perspectives on what the school should become and how and when that can happen. Because of the time required, planning should begin in

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in the fall or early winter for the following school year. We have found a consensus decision-making model (as opposed to a parliamentary one) most consistent with our values and most effective in identifying and prioritizing the needs of the district.

We have also found that offering rationales for our proposals and sharing the collective wisdom of the group greatly facilitates the process.

Planning for improvement can take place in many settings: classroom, department, building, or system. If you perceive that others you work with are not yet ready to initiate formal planning for school improvement, the planning process can still start on a small scale - classroom, department, building, or system. If you believe that others you work with are not yet ready to initiate formal planning for school improvement, the planning process can still start on a small scale.

Planning for improvement is approached collaboratively, rather than coercively. The process is very pleasantly surprising to consider and support and enthusiasm for the promise it offers to both teachers and their parents, but also for you and your professional satisfaction.

1. Teach the general case first. That is, teach with a range of "nonexceptional" examples to establish the basic rule that should control performance. The inclusion of exceptions makes it more difficult to learn the rule. After you have established responding to the "common" examples, then you can reduce the rule before performance becomes overly stipulated to those "common" examples, instead teaching exceptions that include exceptions.

2. Keep the basic rule you plan to teach as simple as possible. This helps to "eliminate" exceptions by teaching a complicated basic rule with many concomitant conditions. It is true that describing the stimulus-response relationships relevant to a particular instructional universe may take a bit more thought and effort to get your instructional universe right. But in order to provide all members of a large universe. Doing this, however, may cause such a complicating "rule" that attempting to teach it as a whole right from the start results in more problems involving the exceptions. Logistical and efficiency concerns in selecting and presenting teaching examples make it desirable to start with a simpler basic rule.

3. Provide sufficient trials to teach an exception. Allow exceptions to occur at relatively low frequency, situations, they create some teaching difficulties relating to the logistics of teaching the exceptions. Often a teacher must somehow the teaching environment to artificial conditions that mimic the "exceptional" situations. This may involve teaching in a different location where the "exceptional" situations (e.g., traveling to a section of town where a supermarket parking lot is usually crowded) can be controlled. Facilitating a bicycle on a bicycle route can be controlled. Facilitating a bicycle on a bicycle route creates an artificial situation that can be controlled. Facilitating a bicycle on a bicycle route creates an artificial situation that can be controlled.

4. When teaching exceptions, intersperse regular teaching examples with the "exceptional" teaching examples. This insures that the learner cannot predict the occurrence of "exceptional" conditions and simply develop a new stipulated behavior. If multiple exceptions must be taught, introduce them sequentially, one for each one to be learned in turn. As trials on each new exception are begun, continue instruction in the previously learned situations.

For community skills to be functional they must be taught in the contexts of situations a student will encounter. This natural range includes a lot of "exceptional" situations. Therefore, we must naturally exercise to teach skills that are not responsive to exceptions. The measure of success for academic programs or students with severe handicaps is effective teaching in performance in community settings (Brady et al., 1976; Williams & Bellamy, 1982). To settle for less than excellence is to deny the student what they are entitled to, and to represent a failure to fully utilize existing best-practice teaching procedures.

References


References continued on Page 2

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