Becoming a Nation of Readers


This report was produced under the auspices of the National Academy of Education's Commission on Education in Public Policy, and sponsored by the National Institute of Education. The commission on Reading was chaired by Richard C. Anderson, Head of the Center for the Study of Reading at the University of Illinois.

The report summarizes the research on reading instruction, identifies problems with current practices, and recommends possible solutions. The report recognizes that quality instruction involves many elements and that improvement in reading instruction will require changes in many elements of teaching instruction, not just a few magic tricks.

What is Reading?

"Reading is the process of constructing meaning from written texts. It is a complex skill requiring the coordination of a number of interrelated sources of information (p. 7). An analogy is drawn between the process of reading and the performance of a symphony. While reading can be analyzed into subskills, it should not be viewed as a time "real" reading takes place only when all the pieces are integrated into a smooth performance."

In reading, being able to say the words aloud gives access to their meaning (p. 8). Understanding what a word requires a very substantial knowledge base to reconstruct the appropriate communication. Because people differ in their knowledge bases, different interpretations of text often occur. Fluent reading skills are essential to good comprehension. Second graders with the same comprehension scores are the ones who decode fast and accurately. When reading skills are weak, the time spent trying to decode interferes with the interpretation processes. Good readers are better than poor readers in pronouncing nonsense words as well (e.g., made, root). This supports the importance of a fluid decoding base. The evidence shows that the average third grader can read aloud about 100 words per minute, while the rate of the poor reader is about 30 to 70 words.

Skilled readers have learned strategies for reading different kinds of material. Complex, unfamiliar material must be read differently than familiar material. Strategies should also vary with the purpose of the reading—say, for a test or for fun. Skilled readers have strategies for monitoring the process of reading and detecting problems to be solved—such as inconsistencies, unknown words, etc.

Learning to read is a lot of hard work and the practice required can become monotonous. If the teacher does not work to maintain motivation, "Teachers whose classes are motivated are described as 'business-like but supportive and friendly' (p. 15). Teachers with motivated students 'conduct fast-paced and varied lessons. Tasks are introduced with enthusiasm and with explanations of why doing them will help one become a better reader' (p. 15). Failure is not fun, and poor readers show the apathy that goes with failure. Good teachers have ways to motivate poor readers by praising steps of progress (describing what the student does right). Reading is a skill that improves with practice. Finding ways to increase practice can improve reading.

Emerging Literacy

Reading begins with the development of oral language skills at home. The knowledge base developed before school is important to progress in reading and comprehension. Once in school, the home experience continues to be important in knowledge development. Vocabulary development in particular is seen to have an important base in how parents talk about experiences their children are having. The kinds of questions a parent asks can aid or impede the development of reasoning skills. Reading aloud to preschool children is seen as an important aid to children learning to read. Records or tapes with "follow along books" can also be helpful. Having access to pencil and paper or chalkboards, with encouragement to write the letters of the alphabet, etc., is beneficial. Parents can also be tutors and directly or

Continued on Page 7

Health Ways: a Computer Simulation for Problem Solving in Personal Health Management

By John Woodward, Doug Carnine, and Lorraine Davis

Health Ways (Carnine, Long, and Wong, unpublished) is a computer simulation designed to teach junior high school students fundamental health problem-solving skills. Students are presented with a problem of a hypothetical character's basic health habits (diet, tobacco and alcohol use, weekly exercise, and stress level), along with hereditary and current disease information. Students attempt to change the character's habits through an interview-like game format. In order to win the game, students must prioritize changes in health habits according to hereditary and current disease information, all while controlling stress level and maintaining changes that have already been made. This entails moving the character's expected age (i.e., the character's life expectancy if no significant changes are made) to his or her winning age (the life expectancy if significant changes are made). Some health changes are contingent upon successful scores on a -- a computer program device that generates random numbers and acts as a roll of dice.

Health Ways has a series of graded steps, from a programmed introduction of the rules and special features of the simulation to the actual games. The games are divided into easy tutorial games, more difficult ones, and speed and expert games. A help menu explains which health habits are related to a particular disease and recommends strategies for winning the games. Further information about the game, its objective, and a more detailed presentation of related health facts and concepts are presented in a printed instructor's guide and in a printed user workbook that accompany the program.

As a simulation, Health Ways has certain advantages over the typical health tutorial. While tutorials tend to concentrate on discrete facts and concepts often giving explicit feedback about the correctness of every response, Health Ways requires students to integrate their knowledge of health. Students must respond to constantly changing information by manipulating several variables at once. For example, when a player succeeds in changing a game character from a moderate smoker to a non-smoker, the character's stress level increases significantly. Stress, in turn, must be controlled by medication, counseling, or increased exercise. While the player attempts to make other changes in the character's profile, he or she must remember to maintain the nonsmoking change or it will return to its previous level (i.e., moderate smoking). Figure 1 depicts a successful change in smoking and its effect on expected age and stress level. To be sure, a simulation requires more preskill instruction than a health tutorial, and with some students explicit strategy training is necessary. However, students learn to apply information in a decision-making or problem-solving context, one that models the dynamics of everyday personal health management.

There are other advantages to Health Ways that are in keeping with simulation instruction. Time is compressed, thus demonstrating to students the long-term effects of deleterious health habits in the space of a single game. Cause and effect relationships between improved habits and increases in expected age are clearly demonstrated. The interplay of several variables is presented in a controlled setting. Yet as much as simulations have been touted for many of the features just described (e.g., Cunningham, 1984; Miller, 1984), empirical studies into their educational merits have tended to be less than substantiating.

Simulation Research

The effectiveness of simulations has been debated for over twenty years. Research into content simulation hypot-
esises that simulations lead to increased retention, improved student attitudes, and/or greater critical thinking skills has produced results that have been either un supportive (e.g., Cher- ryholmes, 1963; Dray, 1977) or mixed (e.g., Wentworth & Lewis, 1973; DeBiase, 1977). However, much of this research has been of poor quality; often it is merely descriptive, at times control groups have not been used, and frequently students have not be randomly

Continued on Page 14
Dear Editors,

Gentlemen:

We are searching for information leading to an instructional bank of long- and short-term instructional objectives for the Direct Instruction Programs. Do you have any knowledge of or are you working on a project of this nature? Also, would you please pass this query to the next DI Newsletter if possible? Also any information about anyone who has used Precision Teaching strategies for monitoring the Direct Instruction Programs would be helpful.

In the Cache County School District, the Special Education Program is planning on developing a bank of instructional objectives and an accompanying Precision Teaching Monitoring System for all of the Direct Instruction Programs. However, before we embark on such an ambitious project we are attempting to find out what has been done by anyone else up to this point in time. We would appreciate any information of this nature that you may have access to.

Sincerely,

Voleta Fillied
Special Education Coordinator

The authors of the Corrective Reading Series:

Wesley Becker
Linda Carnine
Julie Eisele
Zig Engelmann
Phyllis Haddox
Susan Hanner
Gary Larson
Linda Meyers
Jean Osborn
Steven Osborn

Send to: Association for Direct Instruction
P.O. Box 10322
Eugene, OR 97477
ATTN: Corrective Reading Revision

Dear Editors,

Please announce the following: DI IN KOTZEBU, ALASKA!

Do you want a unique, above the Arctic Circle experience? We are a community of about 2600 people (about 90% Eskimos). Our elementary school uses Distar Reading/Language, Reading Mastery and Spelling Mastery in our kindergarten through sixth grade program.

We have developed our program over the last 8 years. There are 18 classroom teachers, 3 special education teachers, 1 Title I teacher, a librarian, a school counselor and a basic skills coordinator.

Our classroom pupil-teacher ratio is 20:1. We have 9 instructional aides who also teach our Inupiaq bi-lingual program.

Salaries are competitive and depend on experience. We have modern living facilities: apartments, duplexes, fourplexes and single family dwellings. There is an excellent Public Health Hospital, a dentist, 3 grocery stores, clothing stores, hardware stores, restaurants.

We need more research on DI programs. Send them to us!

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 total publication costs incurred by the News. Ad sizes and corresponding costs are as follows:

- Full page: $200
- Half page: $125
- Quarter page: $75

The Direct Instruction News is published fall, winter, spring, and summer, and distributed by mail to members of the Association for Direct Instruction. Readers are invited to submit articles for publication relating to DI. Send contributions to: The Association for Direct Instruction, P.O. Box 20752, Eugene, Oregon 97440.

Copyrighted by ADI. 1985.

Editors: Wesley Becker
Associate Editor for Research: Stan Paine
Microcomputer Editor: Russell Garden
Crag Darch
Robert H. Hiner

Departments:
Teacher-to-Teacher
Administrator's Briefing
Dear Doug
Analyses of Curriculum
Microcomputers and DI
Art Director
Layout
Photography
Typsetting
Printing

ATLANTIC COAST DI CONFERENCE

Ed Schafer of Cape Henlopen Sch District with District Office in Newark, Delaware, has informed us that they are holding a conference on Effective Teaching and Direct Instruction on July 10-15, 1985 at the Cape Henlopen Sch in Lewes, Delaware. Ed expects this conference to become an annual event.

The conference will open with registration at 12 noon on Sunday and close at 11:30 AM Monday. There will be workshops to provide information on effective programs/strategies for: teaching reading, language, math, and spelling to handicapped and non-handicapped students at all levels, organizing and managing elementary and secondary classrooms; adopt effective reading programs; teach and manage very low-performing severely non-compliant students; utilize computers and associated software and manage effective teaching programs.

Workshop leaders include James Osborn, Bob Dixon, Geoff Colvin, J. Heineberg, Paul McKinney, Gen Smith, Ed Schafer, and Will Proctor.

Cost of the workshop is $150 for Delaware residents and $200 for out of state people. This should be paid by check or purchase order.

REGISTRATION IS LIMITED

Contact: Dee Patterson
Exceptional Children/Special Program Director
Department of Public Instruction
Townsend Building
Dover, Delaware 19901
(302)736-4668

UNIVERSITY OF WASHINGTON/SPECIAL EDUCATION DEPT.

Mildly Handicapped Masters Degree Program announces a one year RESOURCES/CONSULTANT SPECIALTY

Financial aid is available for selected qualified applicants.

53,000 Stipend with tuition waiver
Teaching certificate required
Application deadline: July 1

Contact: Marcy Stein
Experimental Education Unit
WJ-10
University of Washington
Seattle, WA 98195
(206) 543-4011

2 DIRECT INSTRUCTION NEWS, SUMMER, 1985
Implementing a Motivational Grading System

By Randall Sprick

Parts of this article are excerpted from Discipline in the Secondary Classroom: A Problem-by-Problem Survival Guide, published by Center for Applied Research in Education, West Nyack, NY. All rights are reserved by the author.

In a previous article, information was presented on features of an effective grading system. This article supplies information on how to design and implement the behavioral monitoring aspects of an effective system. This type of monitoring is especially appropriate for secondary school classrooms, but can be adapted to serve as a monitoring system for elementary classrooms as well.

One of the most important features of any motivational system is how records are kept. An efficient system should be easy for the teacher and should demonstrate to students that their behavior is continually being monitored and recorded. The difficulty lies in designing a system that is systematic and objective without requiring huge amounts of teacher time.

The steps below will help you design and implement a record-keeping system that makes grading more objective, helps motivate students, and gives you a wild consequence for misbehavior.

**STEP 1**

Design a record-keeping system. The "Weekly Record Form" (Figure 1) is a class list that provides space to code each student's behavior every day of the week. This form can be used to record attendance, assignments, behaviors that demonstrate above or below average performance, and weekly point totals for classroom performance.

The Weekly Record Form should be kept readily accessible at all times. Some teachers will wish to keep forms for each class on a clipboard, while others will prefer to use a notebook. The Weekly Record Forms should be kept close to the student who typically works on his desk, propped on a podium or chalk tray, or you may wish to keep the notebook or clipboard with you.

At the beginning of each class, students should see that you have the record form ready to take attendance. If any assignments are due, you can record papers that are handed in on time while simultaneously taking roll. Through the remainder of the period, students should see you periodically using the record form. If a student walks into class late, you can quickly mark a "L" for tardy. If a student needs to be reminded to get to work, simply note an "F" for "off-task" next to the student's name. Immediate coding of these negative behaviors will teach students that they are accountable for their actions each day. When students excel, you can record an "E" for excellence or a "C" for cooperation. If immediate coding of positive behaviors were not reassuring to students, code your notations of extra effort while students are putting out assignments, or anytime prior to your next class. Then, privately, let students know that you have acknowledged their extra effort. Using the Weekly Record Form throughout the week will provide valuable information for evaluating student performance at the end of the week.

**STEP 2**

Determine the total number of points possible for students to earn each week. To do this, first identify the percentage of the grade you feel should be based on class behavior and effort. This percentage may be anywhere from 10 percent to 90 percent of the grade, depending on the type of class. Next, determine approximately how many points students can earn for assignments, tests, quizzes, and so on.

From this information, determine how many points students could earn for participation and behavior. Design your system so that you have at least 20 points per week based on behavior. Having 20 points possible gives the teacher more flexibility in how points are awarded, if you only had 5 points possible per week, then each day a student would either get 0 or 5 points. When at least 20 points possible, each day's performance can be awarded 0 to 4 points.

**Table 1. Suggested Point Losses**

<table>
<thead>
<tr>
<th>Breakdown of Reduced Points</th>
<th>% of weekly total</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any disruptive behavior</td>
<td>-10%</td>
<td>-1 point</td>
</tr>
<tr>
<td>Any reminders needed for</td>
<td>-10%</td>
<td>-1 point</td>
</tr>
<tr>
<td>class rules or staying on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tardiness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Late work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unexcused absence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess absence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Made up with extra credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assignment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sent out of class</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

for a class where 20 points per week could be earned for class performance.

- **Discursive behavior** Students will lose points for any disruptive behaviors. Behaviors that result in a loss of class time should logically affect the student's classroom performance grades. This automatic response allows you to remove unemotionally and predictably. Students will learn that they are accountable for their behavior at all times.
- **Tardiness** A loss of points for tardiness demonstrates to students that they can earn points for their performance once they are in class, but that being late for class will affect their overall evaluation. Students who have not learned to arrive on time will have difficulty maintaining a job.
- **Reminders about following class rules or staying on task** Occasionally, students will need to be reminded of rules, or they will

Continued on Page 4

DIRECT INSTRUCTION NEWS, SUMMER, 1985
Effective Grading — Continued from Page 3

need to be reminded to stay on task. A loss of points in these areas simply tells students that they need to remember to be self-disciplined.

• Late work: A loss of points for late work is a clear demonstration to students that they are accountable for turning in work at a specified time. Students should automatically lose the designated points for the day, plus have a percentage of the points possible on the assignment. For example, the student might lose participation points for failing to have the assignment ready on the day it was due, and 10% of assignment value.

• Unexcused absences: If students have an unexcused absence, they obviously have not taken advantage of the opportunity to earn points. Therefore, students earn no participation points and are given no opportunity to make up the points.

• Excused absences: If students have an absence, they lose points, but are allowed to earn the credit they have missed through a make-up assignment. This procedure is not designed to penalize the students who are ill. It is designed to demonstrate that class time is valuable. When class time is missed, less learning takes place. Thus, a small extra credit assignment must be completed to compensate for the lost time. Students will learn that they are accountable for making up class time, and that absences are only worth while when unavoidable.

This procedure should also apply to students who miss class due to involvement in sports, student government and other extra curricular activities. Students should understand that participation in these activities is legitimate, but that they are still accountable for class time.

If at any point, you have a student who has a serious illness, exceptions should be made. If a student is out of class over an extended period of time, award performance points as regular work is made up.

Some administrators object to this procedure of requiring make-up work to be able to earn the participation points. Be sure to clear this procedure with your district administration before implementing this aspect of the grading system. If you are not allowed to require make-up assignments for missed class time, you will simply have to give the full points to any students with excused absences.

• Send out of class: If a student is sent out of class, she has lost the opportunity to earn performance points for the day, and has been penalized for the severity of the disruption.

Figure 1 is an example of how an eighth grade history teacher might award points. Use this form, or simply follow the suggestions below.

a. Note the participation and effort percentage.

b. Note the total weekly performance points.

c. Identify the types of behaviors that demonstrate average student performance and determine the number of points students will earn for average performance (80% of total points).

d. Identify the types of behaviors that demonstrate excellent participation and effort and determine the number of additional points earned.

e. Identify factors that will result in failure to earn points and determine the number of points that will not be earned.

f. Identify factors that will result in bonus points and determine the number of bonus points earned.

STEP 4

Assess weekly performance points. At the end of the week, your Weekly Record form will have all of the information you need to determine the student’s performance points. Simply follow the steps below:

a. Begin with the number of points students can earn for average performance.

b. Add the appropriate number of points for each notation of excellence.

Continued on Page 5
Effective Grading Contined from Page 4

c. Subtract the appropriate number of points for each notation of inappropriate behavior.

d. Record the total number of points earned on the weekly record sheet.

In looking at a filled in form as in Figure 1, it may appear that a lot of work is required to use the form and determine the point totals. The first week of using the form will be like learning to do any new task. Initially, it may be difficult. But with use it will become more automatic and easy. With practice, all of the coding of behavior becomes a habit that requires no additional time or effort from your teaching day, and awarding the points at the end of the week will take no more than five minutes at the end of the class.

STEP 5

Design a procedure for giving students their weekly classroom performance grade. Before students leave on Friday, they should be given their weekly performance points. If students do not receive feedback about their classroom performance until Monday, the time delay may weaken the procedure. Students need frequent and consistent feedback.

Towards the end of the period each Friday, plan to spend five minutes figuring out student, performance points. During this time, students should be engaged in an independent task. Once determined each student's weekly performance points, there are several different ways to actually give their grades. The consensus is that students have an opportunity to see how their grades were determined.

Post the Weekly Record Form so that each student can see their performance marks and the point total for the week. The major advantage of this procedure is that weekly performance points do not have to be transferred to another sheet, and students can see exactly how their performance points were determined. The major disadvantage is that everyone's performance points are visible to everyone in the class. This lack of privacy can result in teasing, or may result in some students bringing about poor performance grades.

Provide students with identification numbers. Post the Weekly Record Sheet, but cover students' names with another sheet listing the corresponding identification numbers. This procedure ensures privacy and also does not require any transferring of performance points or performance marks. The major disadvantage is that it will take time to organize the system so that students know their numbers. However, once the system is set up, a simple cover sheet can be used week after week with all of your students.

Conclusion

A monitoring system must show students that their daily participation and behavior is important enough for the teacher to observe and record the performance of each student. This forces the teacher to carefully track behavioral expectations. In addition, it forces the teacher to give feedback to every student, at least once per week, on the degree to which expectations are being met. When most students realize that the teacher is continually and objectively monitoring their behavior, they try to meet the teacher's expectations.

The second volume, Paeideia Problems and Possibilities, is even more resistible. It consists of 25 pages of background information on the Paeideia Proposal, 31 questions and answers about the curriculum framework of the proposal, and 7 "problem areas" and comments relating to implementation of the proposal. The questions and problems are the kind which one would expect from a "coeducator" planted into an audience one is addressing. They do not provide the kind of balanced treatment which the volume title suggests they might.

Volume three, The Paeideia Program, provides somewhat more specificity. It discusses three kinds of teaching—tutors, coaches, and didactic instruction—ten common subject areas, and several guidelines for organizing and structuring a Paeideia School. It appears that the reader is expected to be able to reform a school along Paeideia lines after completing the three volumes series. However, the books do not provide sufficient details for doing so. Don't get me wrong. There are some things about the books that I like. I like alienation. And I like boxed sets of books. I even made a wooden box once for a three-volume series that came without a box. I also like light tan or cream-colored things with brightly-colored, boldly contrasting words or designs on them. But when it comes to professional reading, I like substance as well as the next person.

A Paeideia supporter might counter my criticisms by saying that I do not fully understand the Paeideia system—that I am overlooking the significance of the approach. Of course, they would be right. I do not fully understand much of anything which is not fully articulated, and I often overlook the significance of things stated only in general terms or of things I have seen or heard stated many times in many other places. In my simple mind, that is simply the way I perceive the content of these books. Maybe there is something significant in this series that I am overlooking. If so, maybe someone will wake me up to it by hitting me over the head with one of the books—or with all three. At 350 pages all together, that wouldn't hurt too much. Besides, many of the pages are empty.
Introducing two new Special Supplements to SRA's Reading Mastery program

Reading Mastery Seatwork
Reading Mastery Testing and Management System

These two special supplements are a direct result of suggestions that SRA has received from teachers like you...time and work saving ideas to help you...

Teach to mastery — easily, with greater confidence
Track each student's progress — conveniently, objectively
Provide practical, practice activities that are fun...without time consuming preparation

Here's what each new product offers:

Reading Mastery Seatwork
Fun and motivating activities that reinforce and extend skills in Reading Mastery: Dictar Reading I and II

Everything you asked for is provided.
The special print (orthography), reading vocabulary and skills sequence are carefully correlated with lessons in Reading Mastery.
The blackline master format is convenient to use and saves you money.

Each book of 160 activities is a real work saver.
Activities are ready to use and require only minimal teacher introduction.
Instructions are printed on each page.

Skills include:
Decoding and Comprehension Readiness
Sound and Letter Identification
Word Identification
Sentence Structure
LITERAL COMPREHENSION
Inferential Comprehension

Components:
1 Book of Blackline Masters (160 Activities) for each level

Reading Mastery Testing and Management System
Compact, easy-to-administer tests that students complete throughout the school year

Testing and tracking student progress couldn't be easier.
Testing begins with the placement test and continues with mastery tests after every 20 lessons.
Each paper-pencil mastery test is group-administered and requires only 20 minutes to complete.
By using test results, you can quickly identify the specific skills students have mastered.

The complete system helps you ensure continued success.
Each Student Book contains an individual skill profile chart for convenience in tracking student progress and showing minimum competencies.

The Teacher's Book contains charts that objectively measure individual and group performance...remedial exercises for students who need them.

Components:
Each test package contains
1 Teacher's Handbook and 15 Student Books

These products offer the outstanding quality you've come to expect from SRA.
Order today and make Reading Mastery even more successful for you and your students.

Mail this form to:
School Division, SRA, 155 N. Warner Drive, Chicago, Illinois 60606

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Order#</th>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7-6610</td>
<td>Reading Mastery I Test Package</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>7-6612</td>
<td>Reading Mastery II Test Package</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>7-6613</td>
<td>Reading Mastery III Test Package</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>7-6614</td>
<td>Reading Mastery IV Test Package</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>7-6615</td>
<td>Reading Mastery V Test Package</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>7-6616</td>
<td>Reading Mastery VI Test Package</td>
<td>15.00</td>
</tr>
<tr>
<td></td>
<td>7-2071</td>
<td>Reading Mastery Seatwork</td>
<td>24.50</td>
</tr>
<tr>
<td></td>
<td>7-2072</td>
<td>Reading Mastery II Seatwork</td>
<td>24.50</td>
</tr>
</tbody>
</table>

Bill To: 

Name: 
Address: 
City, State, Zip Code: 
Phone: 

Ship To: 

Name: 
Address: 
City, State, Zip Code: 
Phone: 

Shipping Charges: 

Sales Tax: 

Total: 

All orders are subject to purchase, subject to acceptance or rejection. Add 6% Illinois Sales Tax. All orders outside of Illinois will be billed at SRA published rates and conditions of sale. Prices are subject to change without notice.

SRA *
Becoming a Nation of Readers

Continued from Page 1

indirectly teach their children to read. Many do so successfully. It is suspected that computers will have an effect on early learning before too long. Parents can, and do, play a critical role in their children's development of reading skills. Perhaps we need more active plans to encourage effective parental practices.

Kindergarten Reading Instruction

Those of us involved with Direct Instruction around the days of the In-Come-Englmann Preschool (1964) and through 17 years of Follow Through know well that kindergartners can be taught to read and to enjoy their skills. Twenty-one years later, the Commission on Reading/35/ has established its first National Professional group to endorse the teaching of a systematic approach in reading in kindergarten.

"Based on the best evidence available at the present time, the Commission favors the teaching of basic reading and language that includes both formal and informal approaches. The teaching, however, should be systematic but free from undue pressure" (p. 20-30). The children do not learn every day on frequency, typically those whose oral language skills are poorly developed. For these children, ample oral language experiences should be undertaken first. This experience is especially important for those in non-English-speaking homes. Children also need to learn concepts about written language and its functions—what words and sentences are and can do—so that they have some idea what life they are talking about. Take the letters STOP. Children need to learn early the relation to the spoken word 'stop', and its meaning. With great variation in the entry skills of students, kindergarten teachers (like all teachers) need to be able to assess student skills and then build on them. (1977)

First Grade Reading—Basal Readers

"The observation that basal programs ‘drive’ reading instruction is not to be taken lightly. These programs strongly influence how reading is taught in American schools and what students read. It has been estimated that 75 to 90 percent of what goes on in reading is controlled by basal reading programs. Five of the seven are said to control 75 percent of the market. Early in this century, nearly all students were taught to read through basal reader analysis. "educators such as William S. Gray were at first in favor of this approach. American schools away from what they perceived to be the 'heartless drudgery' of the traditional models found their plans and others advocated the look-and-say approach. The thinking was that chil-#EndNote

Extending Literacy

This section of the paper critically examines the quality of textbooks related to subject matter areas and literature, the nature of teacher instruction, and opportunities for meaningful practice. It makes use of "readability formulas" in the attempt to control the difficulty level of texts. The Commission points out that these formulas do not examine other aspects of writing that affect comprehension—such as logical organization and clarity of sentence structure. Examinations of texts show that many fail to "lay bare the fundamental structure of the matter—geography, health, and science..." (p. 68). Many texts are poorly organized, consisting of little more than "lists of facts loosely related to a theme. Abrupt, unmotivated transitions are frequent. Textbooks are unlikely to emphasize a trivial detail or a colorful anecdote as a fundamental principle.... When textbooks make clear the connections between motive and action, form and function, or cause and effect, students understand what is being taught. In examining the research on teaching practices that help extend literacy, the Commission concludes that "good teaching requires critical concepts and reasoning processes..." "Direct instruction needs to be characterized by a clear definition of objectives, attention to organization, and guided practice. Direct instruction in comprehension means explaining the steps in a thought process that gives birth to comprehension. It may mean that the teacher models a strategy by thinking aloud about how he or she is going about understanding a passage. The instruction includes information on why and when to use the strategy. Instruction of this type is the surest means of developing the important instructional strategy that was identified earlier as characteristic of skilled readers" (p. 72). The report summarizes a number of studies where directly teaching strategies for attacking text led to the learning of generalized strategies that improved comprehension. The Commission recommends that such strategies be embedded in social and science and science lessons and that teachers be given training in how to use these relatively "new" direct approaches to teach reading.

The report next examines activities where students can get independent practice. "The teacher must discuss critical of typical teamwork activities which occupy 70% of the time available for reading in the elementary grades." The activities often have little value in teaching reading (as when the students are asked to underline the frequent constituent of a sentence). In contrast, students average only 7 to 8 minutes a day in silent reading. The research suggests that the amount of time devoted to workbooks or worksheets is related to year-to-year gains in reading proficiency. The amount of time spent on silent reading out of school is consistently related to gains in reading achievement. However, a study of fifth graders showed that most students read very little out of school—50% average 4 minutes a day or less, while they average 130 minutes a day watching TV. The research suggests
that independent reading may be a major source of vocabulary growth. They conclude that "if the books needed to be improved and silent reading still encourage more at both home and school.

Children read more books when someone helps them choose books in specific books, when guidance in choosing books is provided, and when time for reading is provided.

Writing is an activity that supports the development of reading skills. One recent study of elementary school students showed that "only 15% of the school day involved any kind of writing activity. Two-thirds of the writing that did occur was word for word copying in workbooks. Compositions of paragraphs or more in length 'Commissions even at the high school level'" (p. 80). Students need to be encouraged to write more. "Writing is most beneficial when students have a reason to communicate to a genuine audience." (p. 81).

The Teacher and the Classroom

As most readers of ADI NEWS should know by now, effective teachers "scheul" their instruction to match reading activities as a priority, move through slow, intense, and inappropriate pace, stimulate and sustain children's interest, and "take the high rates of success" (p. 92). The report examines research on grouping practices and teachers' use of reading strategies in history and suggests that progress of slower performing children rather than facilitating it. An important test in the quality of small group instruction is needed and students should not be "locked into" their reading group for other instruction.

Testing and Reading Instruction

In examining the roles of norm- referenced versus criterion-referenced tests in reading programs, the report notes that better reading programs tend to use tests more. They suspect that the tests help to motivate teachers to be accountable through the feedback they provide. The report is critical of the use of criterion-referenced tests in mastery-learning type programs where reading is broken down into a series of subskills. The Commission does not believe that learning to read involves learning one skill, adding another, adding another, etc. Rather, they see reading to learn as involving the "close knitting of reading skills that complement and support one another" (p. 97). (My own view is that some mastery approaches have fragmented the learning process, but this need not be the case.) Norm-referenced tests are seen as useful, but may distract from the major goals of teaching reading if instruction focuses on just doing well on the tests. They suggest an assessment of basic reading proficiency than that provided by norm-referenced tests, to be obtained by ascertaining whether students can and will do the following: Read aloud unfamiliar selections from appropriate social studies or science textbooks; explain the plots and motivations of major characters in grade- appropriate fiction; read extensively from books, magazines, and newspapers; discuss public issues; and articulate suggestions for teachers to tape record the oral reading of each child three times a year and keep the tape on file for diagnostic and reporting to parents." (p. 99).

Teacher Education and Professional Development

The Commission points to the inadequate time devoted to formal learning and applications in most teacher preparation programs. In elementary education, only about one-third of the under-graduate program is devoted to education courses, including "foundation courses." The foundation courses are often criticized as being too theoretical (taught often by teachers who are not familiar with classrooms). In contrast, the practice courses are often seen as too simplistic. At best, two courses are directly related to reading (Reading and Language Arts). The Commission becomes concerned when a "Training program in reading and other areas and recommends that 3-year training programs be increased.

On-going professional development efforts often miss the mark. The more time teachers devote to reading, the more contacts with consultants over a period of time, including visits to classrooms. It is important to them, a group of teachers, and together and give mutual support in learning new strategies. Provision for experiencing a teacher's entry into the profession should also be undertaken. Experienced, effective teachers might be given more opportunities during the first year or two.

The clinging note before the recommendations focuses on The Ethics of Effective Schools. Effective schools have vigorous instructional leadership, usually from a principal. Yet, the report notes that in some states, principals do not even have the knowledge to teach reading. Effective schools have "high but realistic expectations about the progress that students will make in reading." Effective schools "are characterized by school pride, collegiality, and a sense of community. Effective schools have 'order and discipline.' Effective schools "maximize the amount of uninterrupted time available for learning." (pp. 112-114).

Recommendations

"The more elements of good parent- ing and teaching, and good practices that children experience, the greater the likelihood that they will achieve their reading potential." The recommendations encapsulate the information presented in this report about the importance of family to produce children who read with high levels of skill and so frequently with evident satisfaction.

Parents should read to preschool children and informally teach them about reading and writing. Reading to children discussing stories and experiences with them, and with a light touch—helping them learn words and stories that are consistently associated with eventual success in reading.

Parents should support school-aged children's continued growth in reading. Parents of children who become successful readers monitor their children's progress in school, become interested in school programs, support homework, buy their children's books or take them to libraries to choose reading materials, and encourage more at both home and school.

Children should spend more time writing. Opportunities to write more than a sentence or two are infrequent in many American elementary school classrooms. As well as being valuable in one's sight, writing promotes ability and creativity.

Textbooks should contain adequate explanations of important concepts. Textbooks in science, social studies, and other areas should be clearly written well-organized, and contain important information and concepts. Two often the textbooks used in American class rooms do not meet these standards.

Schools should maintain well-stocked and managed libraries. Access to interesting and informative books is one of the keys to a successful reading program. The selection of books is a librarian who en-courages wide reading and helps match interests and reading abilities with available materials.

Schools should introduce more comprehensive assessments of reading and writing. Standardized tests should be supplemented with assessments of reading fluency, ability to summarize, and critically evaluate lengthy selections, the amount of independent reading that goes on, and the amount and quality of writing.

Schools should attract and hold more able teachers. The number of able people who choose teaching as a profession has declined in recent years. Reversing this trend requires higher admissions standards for teacher education programs, stronger standards for teacher certification, improved working conditions, and higher teachers' salaries.

Teacher education programs should be strengthened and improved in quality. Prospective elementary teachers do not acquire an adequate base in either the liberal arts or sciences, in pedagogy. They get only a sliming introduction to the field of education, the knowledge required for teaching reading. The knowledge of reading programs should be extended to five years and the quality and rigor of the instruction should be increased.

Schools should provide for the continuing professional development of teaching staffs in order to ease the transition of novice teachers into the profession and programs to keep veteran teachers abreast of advancing knowledge.

America will become a nation of readers when verified practices of the best teachers in the best schools can be introduced throughout the country" (p. 117).

Cyanus of Becoming, A Nation of Readers, is now available for $4.50 each total $1.00 of which is deductible to The University of Illinois I.R.S. Send checks or money orders to: Becoming a Nation of Readers, P.O. Box 2774, Station A, Champaign, Illinois 61820-2774.
Educational researchers are slowly developing a repertoire of effective instructional models that teachers could use in the classroom. Another crucial, though relatively neglected, set of practices has to do with the content and organization of instructional materials themselves. The selection and application of these practices are left largely to content experts and publishers. Although instructional designers claim that these practices are within their area of expertise, publishers of conventional instructional design models, like behavioral objectives and tasks, are too limited to avoid them. The present paper explores those limitations and then offers an alternative approach to instructional design based on theories of instruction (Engelmann & Berliner, 1980). The example selected to illustrate these points, constructing and interpreting arguments, was not chosen because of the current popularity of argument skills, but because the need to be a reader in the role of a student. It involves a difficult task for most of us. The ability to interpret an argument can best be appreciated when arising is a demand, a common situation for students. Students relative difficulty interpreting logical argument forms in Table 1 is required to put habits in the role of teachers.

A familiar method in conventional sign is writing behavioral objectives. Behavioral objective for drawing conclusions from evidence might go something like this: Given three sets of evidence, the student will write three direct conclusions. The behavior objective specifies the conditions under which behavior occurs, the behavior itself, and a criterion of acceptable performance. Behavioral objectives clarify what students are planning and help teachers help when students are struggling. Another conventional design method is analysis, addresses the "how-to" instruction. Hierarchical task analysis (Kolb, 1970) breaks a task into components, identifies pre- and core components, and sequences them by quality and components. In using task analysis to develop logical arguments to draw conclusions, the number may at first appear important vocabulary including argument, evidence, to conclude.

Table 1. Ten Forms of Syllogisms in Which the Conclusion Begins with Some, All, or No

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All A are B.</td>
<td>2. Some A are B.</td>
</tr>
<tr>
<td>All B are C.</td>
<td>Some B are C.</td>
</tr>
<tr>
<td>3. All A are B.</td>
<td>4. Some A are B.</td>
</tr>
<tr>
<td>Some B are C.</td>
<td>Some B are C.</td>
</tr>
</tbody>
</table>

The truly pivotal concepts in arguments are some, all and. Look at the middle column of boxes in Table 2. In argument 1b in Table 2, the word some doesn't that one class overlaps another. Diagram 2b the word all places one class inside another. In diagram 3b the word no shows exclusions. Overlap, inclusion, and exclusion are the primary ways one class can be related to another. Instruction on these three relational concepts would have first when teaching the students to draw conclusions from evidence. Then the ten individual argument forms in Table 1 would be presented, one at a time, as a way of creating smaller instructional steps. Students would be tested on one argument form before entering a new form. First a demonstration:

"Here are two statements of evidence:

- No A are P.
- All B are P.

The conclusion is No A are M. We can use diagrams to show the evidence and the conclusion.

No A are P. All B are P. No A are M.

N P F M

Then comes teacher-directed practice: Read these two statements of evidence.

All S are R.
No R are T.

Raise your hand when you've figured out the conclusion. If you have trouble, draw a diagram for each statement. What's the conclusion? . . . Yes, No S are T.

(Teacher gives immediate feedback, correcting mistakes by drawing diagrams of each sentence.)

Next would come independent practice.

Write the conclusion for each argument.

No A are B. All C are B. All W are X. No X are Y. All E are F. No G are F.

The teacher would test students on arguments with no before presenting arguments with some or even. These arguments forms would be presented with demonstrations, teacher-directed practice, and independent practice. After writing conclusions, students would learn to critique arguments. The teacher begins with a model of valid and invalid arguments, like those in Table 3. The teacher would explain why the first argument in Table 3 is invalid."You've learned to construct arguments like this one. The second statement of evidence excludes the large class adults from the class children. Adults are excluded from the class of children, so basal publishers.

Table 2. Illustration Same, All, and No Structure

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. All men are human.</td>
<td>1b. Some men have brown hair.</td>
</tr>
<tr>
<td>2a. All men are human.</td>
<td>2b. All humans require oxygen.</td>
</tr>
<tr>
<td>3a. All men are human.</td>
<td>3b. No birds are human</td>
</tr>
<tr>
<td>4a. All men are human.</td>
<td>4b. Some men are birds</td>
</tr>
</tbody>
</table>

Table 3. Models of Valid and Invalid Arguments

<table>
<thead>
<tr>
<th>Valid Argument</th>
<th>Evidence</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>All basal publishers are adults.</td>
<td>All adults are children.</td>
<td>No basal publishers are children.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Invalid Argument</th>
<th>Evidence</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>All basal publishers are adults.</td>
<td>No adults are children.</td>
<td>No basal publishers are children.</td>
</tr>
</tbody>
</table>

Continued on Page 10

DIRECT INSTRUCTION NEWS, SUMMER, 1980
who are within the class of adults, must also be excluded from the class of children.” This explanation is actually a re-
view, since the students will already have learned to draw conclusions.

The difficult teaching comes in explaining invalid arguments like the one at the bottom of Table 3. Since both
basal publishers and burns are in the class of adults, the diagram for the se-
cond statement of evidence can be drawn this way:

<table>
<thead>
<tr>
<th>Adults</th>
<th>Burns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basal Publishers</td>
<td>Burns</td>
</tr>
</tbody>
</table>

In this diagram Burns is inside the class adults.

The diagram for the conclusion (be-
low) shows burns outside the class adults. The second statement of evi-
dence and the conclusion contradict each other, so the argument cannot be sound.

Adults

Burns

Following these explanations, the teacher guides practice on examples like those in Table 4.

Table 4

| All basal publishers are adults. | Some adults sell pornography. |
| Some basal publishers sell pornography. | |
| All basal publishers are adults. | All basal publishers sell books. |
| All adults sell books. | All basal publishers are adults. |
| No basal publishers are adults. | No basal publishers are burns. |
| No adults are burns. | |

The solid-lined boxes show the con-
cclusions. Some humans are brown-haired.

Apply the diagram-drawing stra-
genics to cover the following argu-
ments. All men are humans.

Do not halucinate.

First draw a dotted box for the class of humans. Check the diagram against the 2

1st argument: No man are reptiles.

2nd argument: All dogs are reptiles.

3rd argument: Some men are reptiles.

4th argument: All humans are reptiles.

Draw the dotted box and the solid lined boxes for the evidence, then write the conclusion.

No humans are reptiles.

Table 5 contains arguments to be expired. Students who apply the strategy for drawing conclusions may think that conclusions are sound, though they are not. The first argument in Table 4 is "Adults appear in the box. Burns appear in the box. Thus the only class of adults is adults."

In Table 5, the analytic design finds that the strategy for drawing conclusions compares and contrasts with other related strategies, in this case the analytic design. The instruction in the analytic design contains the drawing and interpreting, and likewise, with other strategies. The analytic design students are interested in contrast with the analytic design students. The analytic design in Table 4 contains arguments to be expired. Students who apply the strategy for drawing conclusions may think that conclusions are sound, though they are not. The first argument in Table 4 is "Adults appear in the box. Burns appear in the box. Thus the only class of adults is adults."
The conclusion in Table 4 is consistent with the diagram for the evidence, yet the conclusion is faulty. Basal publishers do not sell pornography. The integration analysis has revealed a serious flaw in the structure analysis. Thus, the patterns found in the original structure analysis of valid arguments must be modified: the designer must redo the structure analysis, this time inspecting both invalid and valid arguments. A key to revising the original structure analysis lies in the fact that a different diagram can be drawn for the evidence. The pattern for the revised structure analysis is this: If you can draw a diagram for the evidence that doesn’t match the conclusion, you’ve shown that the argument is not valid. We can illustrate the pattern with a different diagram of the evidence for the first argument in Table 4.

All basal publishers are adults. Some adults sell pornography. Some basal publishers sell pornography.

The diagram shows the evidence. Yet the classes for the conclusion: Basal Publishers and Sell Pornography, do not overlap. We cannot necessarily conclude that some basal publishers sell pornography. The argument is not valid.

The revised structure analysis students would be shown that a diagram for invalid evidence does not match the conclusion. The students would then be told to try to draw a diagram that doesn’t match the conclusion. If they succeed, the argument is not valid. If the diagram matches the conclusion, the argument is valid. Consider this example. In the last argument in Table 4, the key word is is, so the classes in the conclusion should be outside of each other. Try to draw a diagram for the evidence that does not match the conclusion. First draw a dotted box for the class named in both statements of evidence. Then draw the other two classes, trying to show bumps inside adults.

Here’s the diagram:

The diagram shows the evidence. Yet the classes for the conclusion: Basal Publishers and Sell Pornography, do not overlap. We cannot necessarily conclude that some basal publishers sell pornography. The argument is not valid.

Drawing diagrams to critique arguments is difficult. Students require lots of practice at trying to draw diagrams that don’t match the conclusion. Here’s an argument for practice. Draw the diagram to see if the conclusion is valid. (Check your answers by referring to Table 13.)

The conclusion and the diagram don’t match, so the argument is not valid. See if this argument is valid:

Suppose a designer conducted a structure analysis on the stories summarized in Table 7 and other similar stories. As you glance over the story summaries, note how diverse the stories are. A structure analysis for these stories would be relatively useless because specific patterns are almost impossible to identify. That is the best the designer might come up with in this pattern: stories tell about things that happen. The pattern is too vague to serve as a basis for a strategy. Continued on Page 12

Table 5. Ten Forms of Syllogisms in Which the Conclusion Begins with Some, All or No

<table>
<thead>
<tr>
<th>Conclusion Begins With</th>
<th>Argument Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some C are A</td>
<td>B A C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
<tr>
<td>B a e C</td>
<td>B a e C</td>
</tr>
</tbody>
</table>

The revised structure analysis, based on the integration analysis, leads to a strategy that students can use to draw conclusions and critique arguments. Though difficult, the strategy is both economical and powerful. The economy results from the relative simplicity of drawing a diagram for evidence. The power is reflected in the strategies handling argument construction and argument critiquing.

Comprehension of Primary Grade Stories

A structure analysis can also be applied to something as simple as primary-grade stories. The analysis seeks patterns that can serve as a basis for an instructional strategy, as was the case for constructing and critiquing arguments. Patterns that represent groups of stories are called story grammars. These grammars have been the basis for instructional strategies in a number of research studies. Typically, basal programs approach story comprehension by asking students questions from various skill areas like sequencing, main idea, and literal comprehension. Table 6 illustrates several types of questions with a story from a third-grade basal reader (Rowland, 1942). Learning to answer these teacher questions is not the same as learning to identify and organize important information from the story, but they don’t necessarily lead students to form a gestalt of the story. What’s needed are strategies that lead students to identify and organize important information, on their own. These strategies are particularly important when the students are reading independently.

Propose a designer conducted a structure analysis on the stories summarized in Table 7 and other similar stories. As you glance over the story summaries, note how diverse the stories are. A structure analysis for these stories would be relatively useless because specific patterns are almost impossible to identify. That is the best the designer might come up with in this pattern: stories tell about things that happen. The pattern is too vague to serve as a basis for a strategy.
Table 6. An Illustration of Basal Reader Questioning. "Poor Brontosaurus!" from The Dilettewa: A-Z, Grade 3, Roland (1982)

Table 7. Story-Themes for Possible Structural Analysis.

Table 8. Teaching About Narrative and Expository Stories.

The questions are relatively simple, clear, and brief; i.e., the strategy is economical. The strategy is powerful because it applies to Poor Brontosaurus, Hessel and Gretel and many other stories as well. Once the structure analysis is complete, the analytic designer begins the integration analysis.

Integration Analysis

Integration analysis takes a strategy and compares it with other related strategies to see whether they complement or interfere with each other. In the critiquing example, the integration analysis led to a redo of the structure analysis. In looking ahead to other strategies, integration analysis can serve a different purpose, identifying times when students most apply one of many different strategies. Since some of these decisions are difficult for students, the designer creates instruction to help students make those decisions. For example, stories are often classified as expository or narrative. The passage told Brontosaurus in Table 7 is expository. Poor Brontosaurus, also in Table 7 is narrative. Integration analysis can be used to help create a framework that cues students to use one strategy for narrative passages and a different strategy for expository passages. An instructional pre-

sentation appears in Table 8. The students identify each story as an information story or a story that tells what happens to characters. This decision cues which strategy the students should use. Once students select a strategy, they apply it. The strategy for the expository passage, Brontosaurus, signals the students to learn the steps that made it refece. Expository content is to be remembered. The strategy emphasizes this benefit. They provide a basis for passages require more complex strategies, but such strategies are not needed until later grades (Adams, Carmine, & Gersten, 1982).

The integration analysis not only emphasizes the importance of how to distinguish a new strategy from previously taught strategies, but also reminds the designers to periodic re-remember the strategies. Most students will have little trouble deciding which of two strategies to apply—like simple narrative and simple expository. But as more strategies are introduced, careful review is needed to prevent students from confusing the various strategies. The integration analysis identifies which strategies are most likely to be confused with a new strategy. Those strategies are reviewed before the new strategy is introduced. Also the introduction of the new strategy points out how it differs from the potentially confusing strategies.

While the primary purpose of the structure and integration analyses is to help students learn the steps that made it refece and when to apply the strategies, the strategies have an additional purpose. They provide a basis for passages require more complex strategies. The integration analysis identifies which strategies are most likely to be confused with a new strategy. Those strategies are reviewed before the new strategy is introduced. Also the introduction of the new strategy points out how it differs from the potentially confusing strategies.

While the primary purpose of the structure and integration analyses is to help students learn the steps that made it refece and when to apply the strategies, the strategies have an additional purpose. They provide a basis for passages require more complex strategies. The integration analysis identifies which strategies are most likely to be confused with a new strategy. Those strategies are reviewed before the new strategy is introduced. Also the introduction of the new strategy points out how it differs from the potentially confusing strategies.

While the primary purpose of the structure and integration analyses is to help students learn the steps that made it refece and when to apply the strategies, the strategies have an additional purpose. They provide a basis for passages require more complex strategies. The integration analysis identifies which strategies are most likely to be confused with a new strategy. Those strategies are reviewed before the new strategy is introduced. Also the introduction of the new strategy points out how it differs from the potentially confusing strategies.


Other Components of Analytic Instructional Design

As can be seen in Table 9, structure and integration analysis occurs within a larger context. This, of course, the concept of analytic design are planning, construction, and evaluation. A disproportionate amount of time has been spent discussing the analyses because they are the most creative and innovative aspects of analytic design strategies. However, the quality of the analyses reflected in a program is not the sole criteria for acceptability. Any program must be attractive and marketable. It must also be manageable when it is implemented.

Planning

The manageability of a program can be thought of as how well it accounts for the implementation constraints that exist in schools. The major constraints are the scarcity of instructional time, variability in teacher competence, and the wide range of student abilities in any given classroom. The lack of time makes efficiency essential. Vocabulary instruction illustrates the importance of efficiency. If teachers had thirty minutes a day to devote to vocabulary instruction, programs requiring quality could be used successfully. With only ten minutes a day, however, the analytic designer must be much more ingenious in bringing about adequate learning. More efficient teaching is essential.

A similar problem exists for responding to variability in teacher competence. One response might be to write very elaborate instructional programs. A too elaborate program is impractical, though, because it takes too long to implement. So the designer must respond to variations in teacher competence in other ways: (1) simplify the demands the designed program made on teachers, (2) incorporate realistic levels of teacher in-service, and (3) turn to technology for more sophisticated presentations. For example, Systems Impact is currently developing videodisc instructional courses. The videodisc can reliably present complex material in a vivid, even entertaining way and yet require little extra effort on the part of the teacher.

Marketing constraints are crucial for publishers. How can a program be similar enough to other programs to make teachers comfortable and yet incorporate sound analytic design principles? One tactic is to treat analytic design features that set a program off as marketing strengths. Suggestions about how to teach difficult skills, often left vague by teachers in their own classes, can be treated as specific suggestions to help teachers solve instructional problems. Endless variety in print material, thought to be necessary to motivate students, can be replaced with daily practice that results in students having an opportunity to master skills. The spiral curriculum, which implies that learning failures can be addressed next year, is unwound so that more students will learn what’s presented during the current year.

The point of emphasizing implementation and marketing constraints during planning is to collect the designer’s position, and publisher into a collaborative team. Collaboration yields a product that is both effective and acceptable.

Construction

Construction requires translating the strategies growing out of structure and integration analyses into the lesson components listed in Table 9. Prepare, demonstrate, guide usage (by asking questions based on a strategy), build independence (by gradually dropping teacher questions about the strategy), and correct errors (by reminding students of the strategy that leads to a correct answer).

Our research on the various aspects of lesson construction is reviewed elsewhere (Inglis & Carline, 1982). A computer-assisted instruction study based on the analysis for drawing conclusions can serve as an example. The major independent variable was type of correction. Following a mistake, students either remained on the strategy that had been presented earlier or they were told to correct their answer. Students reminded of the strategy as part of the correction showed significantly higher posttest, transfer test, and attitude survey scores (Collins, 1984). Another important aspect of lesson construction is specifying practice. When a major strategy is first introduced, several practice examples are needed in each lesson to give students the opportunity to master the skill. Later, practice can be more sporadic, but not too infrequent. Periodic reviews fosters retention. Initial mastery followed by periodic review is essential for both comprehension and remembering.

Giving students several practice opportunities on a new strategy leads to very good short-term-looking programs. In our research on teaching students to identify character motives (Carline, Stevens, Clements, & Kameenui, 1983), students read three short passages each day for three consecutive days. All nine stories focused on one social problem. Our programs almost never sequence nine stories of the same type on consecutive days. Yet, a concentration of examples is necessary for many students to master a strategy.

Recommendations about extensive practice to promote mastery must be kept in perspective. In teaching students to comprehend words in context, we found that extra practice using the procedures from math basalts lowered student scores (Darch, Carline, & Gersten, 1984). Testing and then reteaching seems to benefit students only if the strategy they apply to the unknown word is appropriate. These and other research studies on effective teaching practices like corrections, demonstrations, and extensive practice have been receiving increasing attention from publishers and practitioners over the past few years. Hopefully, the quality of the analyses that are at the core of instruction will receive more attention during the coming year.

Table 9. Analytic Design

<table>
<thead>
<tr>
<th>I. Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Creative Aspects</td>
</tr>
<tr>
<td>1. Structure Analysis:</td>
</tr>
<tr>
<td>Strategies with economy and power. (Build schema)</td>
</tr>
<tr>
<td>a. Identify flaws in structure analysis.</td>
</tr>
<tr>
<td>b. Teach students when to use a particular strategy. (Develop metacognition.)</td>
</tr>
<tr>
<td>B. Mechanical Aspects</td>
</tr>
<tr>
<td>Implementation Constraints:</td>
</tr>
<tr>
<td>a. Time available for instruction.</td>
</tr>
<tr>
<td>b. Teacher competence.</td>
</tr>
<tr>
<td>Marketing Constraints:</td>
</tr>
<tr>
<td>Promote differences as strengths.</td>
</tr>
<tr>
<td>II. Construction</td>
</tr>
<tr>
<td>A. Strategy Writing</td>
</tr>
<tr>
<td>1. Prepare.</td>
</tr>
<tr>
<td>2. Demonstrate.</td>
</tr>
<tr>
<td>4. Build Independence.</td>
</tr>
<tr>
<td>5. Correct.</td>
</tr>
<tr>
<td>B. Practice Specification</td>
</tr>
<tr>
<td>1. Concentrated Practice (for mastery).</td>
</tr>
<tr>
<td>2. Periodic Review (for retention).</td>
</tr>
<tr>
<td>III. Evaluation</td>
</tr>
<tr>
<td>A. Gathering Field Test Data:</td>
</tr>
<tr>
<td>Collect data on type of errors and frequency of errors.</td>
</tr>
<tr>
<td>B. Interpreting Field Test Data:</td>
</tr>
<tr>
<td>Look for error patterns relating to planning and construction.</td>
</tr>
<tr>
<td>C. Revising a Program:</td>
</tr>
<tr>
<td>1. Redo planning and construction.</td>
</tr>
<tr>
<td>2. Conduct another field test.</td>
</tr>
</tbody>
</table>

Our research on the various aspects of lesson construction is reviewed elsewhere (Inglis & Carline, 1982). A computer-assisted instruction study based on the analysis for drawing conclusions can serve as an example. The major independent variable was type of correction. Following a mistake, students either remained on the strategy that had been presented earlier or they were told to correct their answer. Students reminded of the strategy as part of the correction showed significantly higher posttest, transfer test, and attitude survey scores (Collins, 1984). Another important aspect of lesson construction is specifying practice. When a major strategy is first introduced, several practice examples are needed in each lesson to give students the opportunity to master the skill. Later, practice can be more sporadic, but not too infrequent. Periodic reviews fosters retention. Initial mastery followed by periodic review is essential for both comprehension and remembering.

Giving students several practice opportunities on a new strategy leads to very good short-term-looking programs. In our research on teaching students to identify character motives (Carline, Stevens, Clements, & Kameenui, 1983), students read three short passages each day for three consecutive days. All nine stories focused on one social problem. Our programs almost never sequence nine stories of the same type on consecutive days. Yet, a concentration of examples is necessary for many students to master a strategy.

Recommendations about extensive practice to promote mastery must be kept in perspective. In teaching students to comprehend words in context, we found that extra practice using the procedures from math basalts lowered student scores (Darch, Carline, & Gersten, 1984). Testing and then reteaching seems to benefit students only if the strategy they apply to the unknown word is appropriate. These and other research studies on effective teaching practices like corrections, demonstrations, and extensive practice have been receiving increasing attention from publishers and practitioners over the past few years. Hopefully, the quality of the analyses that are at the core of instruction will receive more attention during the coming year.

Evaluation

The final stage in analytic design is evaluation.

Evaluating an instructional program, which is often treated as a post hoc exercise, is really a part of developing a creative activity in analytic design. If materials are developed through screening or pretesting, student errors give analytic designers their analytic data of what makes an elegant program. Without the clues offered by student errors, elegant programs cannot be developed. Analytic designers cannot imagine every significant confusion that students will have. Student errors are puzzles that analytic designers solve by extracting their steps in the analysis and construction stages. Designers who approach these puzzles as both a challenge and a responsibility improve their programs. The improvement comes not just from reviewing a program, but from field testing the revision. The revision, field-test cycle takes a lot of development time, but saves a great amount of time for teachers and students. With well-designed programs, students learn more quickly and experience less frustration.

An example of how drastically student errors can influence a program comes from the development of the Systems Impact videodisc instructional programs. For example, field test results have lead to three extensive revisions in the fractions course. With each revision hundreds of students have been involved. Fortunately, each revision has yielded drastically reduced error rates.

Formal research now under way is confirming the importance of the study results. Students who received instruction on a revised version of a CAl Reasoning. Skills program (Inglis, Carline, & Collins, 1985) with the performance of students going through an earlier version of that program. This study will provide one of the first objective measures of the effects of revising an instructional program.

Conclusion

The lack of comprehensive, viable models for instructional design explains the negligible role instructional designers play in conceiving educational materia...
Figure 1. Simulated Effects of Ruby Quitting Smoking.

Before the Change in Smoking

<table>
<thead>
<tr>
<th>Ages</th>
<th>Today's</th>
<th>Expected</th>
<th>Winning</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0</td>
<td>68</td>
<td>75</td>
</tr>
<tr>
<td>Will Power = 200</td>
<td>Stress = 20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name: Ruby
Heredity: Hypertension
Current Diseases: Lung Cancer

A) Weight
B) Tobacco
C) Alcohol
D) Exercise
E) Nutrition
F) Lifestyle
G) Maintenance Menu
H) Stress Reduction Menu

After the Change in Smoking

<table>
<thead>
<tr>
<th>Ages</th>
<th>Today's</th>
<th>Expected</th>
<th>Winning</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0</td>
<td>72</td>
<td>75</td>
</tr>
<tr>
<td>Will Power = 355</td>
<td>Stress = 50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name: Ruby
Heredity: Hypertension
Current Diseases: Lung Cancer

A) Weight
B) Tobacco
C) Alcohol
D) Exercise
E) Nutrition
F) Lifestyle
G) Maintenance Menu
H) Stress Reduction Menu

After 12 days of instruction, students were tested with two measures: the Health Ways Nutrition and Disease Test and the Health Ways Diagnosis Test. The Nutrition and Disease Test was a 30-question multiple-choice test designed to measure students' retention of the basic facts and concepts covered in the day's lesson. The curriculum section of this test consisted of 20 questions based solely on the written curriculum. The retained 10 questions (the curriculum section) covered material that appeared in the first four chapters of the Health Ways simulation. The Nutrition and Disease Test was given twice weekly as a maintenance test. Internal consistency (coefficient alpha) of this measure was .84. The second measure, the Health Ways Diagnosis Test, tested students' ability to analyze three written profiles by diagnosing and prioritizing changes needed in bad health habits. Students also suggested appropriate remedies for improved health by responding to choice options presented by the examiner. For example, one profile showed an individual with a current illness of liver disease and a heredity of diabetes. Weight and diet information showed this individual as seven pounds overweight and eating a lot of empty calorie sweets and foods with cholesterol. She was also a light drinker. The seven other habits were acceptable. The examiner, a registered diettitian, evaluated meals, exercises five times a week, and acted as a distracting information. The Diagnosis Test was applied and the reliability was .85. A strict criteria and a more strenuous

teaching in the written curriculum in the first half of the class period and were randomly assigned to one of two groups for a three-day period. One group worked on the Health Ways simulation, while the other group received typical extension or enrichment exercises (e.g., students recorded and analyzed their diet over a three day period, read short excerpts from magazines or books on topics related to the curriculum). A structured teaching approach was used because of its documented effectiveness in teaching basic skills (12, 13). H. Brophy and Good, 1984; Rosenshine and Stevens, 1986). This was important, as several of the skills tested in the past have not adequately documented the type of instruction given to the "conven- tracted teaching" (14). Structured teaching, as it was used here, entailed large group instruction for the first part of the class, along with a collection of important concepts and vocabulary words and concepts. A structured teaching approach was used because of its documented effectiveness in teaching basic skills (12, 13). H. Brophy and Good, 1984; Rosenshine and Stevens, 1986). This was important, as several of the skills tested in the past have not adequately documented the type of instruction given to the "conven- clean" (14). Structured teaching, as it was used here, entailed large group instruction for the first part of the class, along with a collection of important concepts and vocabulary words and concepts.

By assigned to treatments (Frisby, 1977; Breedelmeier & Greenblatt, 1961). These problems have plagued research into non-computer simulations as well as the sparse educational research involving computer simulations.

There have been basic design problems with simulations that go well beyond these research design and in- strumentation issues. Fletcher (1971) cites four reasons for the disappointing research results: (1) poorly developed games which have not been sufficiently field tested, (2) a great variation in the quality of the goals which do exist (i.e., in terms of complexity, goals, interaction requirements), and interaction of participants), (3) the lack of any clear relationship between the structure of the game and what is to be learned, and (4) vague ad- ministrative procedures associated with implementation of games. Though 14 years old, these criticisms remain largely true today.

A last issue in the simulation literature involves the type and quality of measures used in research. Partly (1975) criticized many instruments as investigagor developed, claiming that they lacked basic information on their reliability and validity. On the other hand, some have asserted that the lack of significant differences in many simulation studies was due to the fact that the measures did not capture everything that was taught (Bocock & Schild, 1968; Megarry, 1970; Cunningham, 1976). Taken together, these criticisms create real problems for simulation researchers. Constructing reliable instruments that measure unusual or highly specific features of a simulation is a very difficult task.

Health Ways: A Study of Effective Instruction and a Computer Simulation

Despite the often gloomy research literature on simulations, the Health Ways simulation was studied in conjunction with a written curriculum. We were interested in determining the extent to which Health Ways augmented: (1) student recall of health facts and concepts, and (2) student ability to ac- curately diagnose and remedy the health problems of three individuals. The Health Ways Supplementary Curriculum was adapted from two wide- ly used junior high school texts. Information that was not pertinent to the Health Ways simulation was deleted, and many of the unusual or difficult vocabulary words were changed or eliminated to lower the readability level of the material. The reading level of the Supplementary Curriculum was sixth grade. Thirty mildly handicapped high school students received structured criteria were used to rate student recognition of health problems and difficulty of the test on the strict criteria, a student must identify and change the three most im- portant health habits in a specific category or an order depending upon use of current disease and heredity information. In the example above, a student would identify a change in alcohol consumption to non- drinker (a change related to current disease), reduce the consumption of eggs, butter, liver, and red meats (the last most important change). Moderate criteria would allow the student to change the consumption of eggs, butter, liver, and red meats (the last most important change). Moderate criteria would allow the student to change the consumption of eggs, butter, liver, and red meats (the last most important change).

In addition to prioritizing, students were evaluated on their ability to control stress, to identify health problems, and to make correlated changes. The ex- aminer increased the stress level from average (1-6) to high (8-16) on each Diagnosis pro- file after the student made two suc- cessive non-exercise changes. Only by immediately attending to this change was the student awarded points for stress management. A score for identifying the main health problem was independ- ent of the correlated change for the problem. Thus, if the student chose to change a health problem that was not the main problem in one of the profiles) by drinking less coffee, tea, or sodas, points were awarded. When the student identified a health problem, but not for making the correlated change (i.e., drinking less eggs, butter, liver, and red meats).

Results of the Study

Performance by the simulation group was very encouraging. As Table 2 shows, the means, standard deviations, and mean percent correct for each of the measures. There were statistically significant differences between groups for instructional method on the average test score (p less than .05) and the simulation section of the test (p less than .01). The difference on the curriculum section of the test approached significance level (p less than .06). All effects were maintained over time (i.e., there were no significant interactions between instructional method and time of testing).

Shaving time lost on all components of the Diagnosis Test were highly significant (p less than .001). Students outperformed their counterparts in the conventional group in prioritizing health problems, controlling stress, identifying health problems, and making correlated changes. Further, a Pearson correlation between scores on the Reading subtest of the Metropolitan Achievement Test administered one day prior to instruction) and the total score on the Diagnosis test was .12. This suggests virtually no relationship be- tween academic abilities reflected by the MAT and the problem-solving skills measured by the Diagnostic Test.

Comparison of mildly handicapped students. Scores of mildly handicapped students on the two main measures were compared with a group of 15 non-handicapped students in regular health classes who did not participate in
Health Ways

Continued from Page 14

Table 1. Means (M) Standard Deviations (SD) and Mean Percent Correct on the Simulation Section of the Nutrition and Disease Test

<table>
<thead>
<tr>
<th>Instructional Group</th>
<th>Post Test</th>
<th>Maintenance Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Correct</td>
</tr>
<tr>
<td>Simulation Group</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>7.33</td>
<td>1.35</td>
<td>73.3</td>
</tr>
<tr>
<td>Curriculum Group</td>
<td>5.60</td>
<td>2.20</td>
</tr>
</tbody>
</table>

Table 2. Means (M) Standard Deviations (SD) and Mean Percent Correct for the Three Groups on the Diagnosis Test

<table>
<thead>
<tr>
<th></th>
<th>Simulation</th>
<th>Curriculum</th>
<th>Non-handicapped</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>TOTAL SCORE</td>
<td>22.8</td>
<td>5.9</td>
<td>21.7</td>
</tr>
<tr>
<td>WITHOUT STRESS</td>
<td>10.3</td>
<td>4.1</td>
<td>10.3</td>
</tr>
<tr>
<td>IDENTIFICATION AND</td>
<td>9.2</td>
<td>2.8</td>
<td>9.2</td>
</tr>
<tr>
<td>CORRELATION ONLY</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References


The study was a quasi-experimental procedure, and its purpose was to compa-

Table 16. Answers

<table>
<thead>
<tr>
<th>All men are reptiles.</th>
<th>No men are reptiles.</th>
<th>Conclusion: No men are reptiles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All men are human.</td>
<td>No men are living things.</td>
<td>Conclusion: All men are living things.</td>
</tr>
</tbody>
</table>

DIREKT INSTRUCTION NEWS, SUMMER, 1985
Improving Performance with Restricted Resources

Stan C. Payne, Principal
St. Alice School, Springfield, OR

In the three years since the publication of A Nation at Risk, pressure to raise student and teacher performance in our nation's schools has increased steadily. In the same time, the fiscal resources for fulfilling this demand have increased only insensibly. The direct result of this increasing restricted. Widespread suc- cess in this endeavor seems distant, at best, as long as the resources available are not essential for the job are primarily fiscal. Time is one resource whose expenditure has more power to influence human performance in schools than any other. Given a current budgery out for instruction, I believe that we can do more to enhance our effec- tiveness by careful management of time than we can by increased spending of money. I will illustrate this point by mentioning several temporal variables which can significantly affect educational performance without increasing educational expenditure.

Scheduling. Do our allocations of school time reflect our priorities? In some schools, more time is devoted to lunch, recess, or organizational activ- ities than to any single subject area. With all the planned events, there is little need for the "grabbers" taking place in our day, in- struction is almost relegated to the status of "What do we do with what time is left." Instruction in academic areas must be reinstated to status of "importance" and carefully guarded against "time grabbers".

Following planned schedules. The best thing that can be said is that they are only as good as people's adherence to them. Do ac- tivities start and stop on time? Are academic periods scheduled to start and end early — but not non-academic periods? Look at the logic of the

Schedules in the classrooms in your building(s), then spot-check implementation of time in the "grabbers" that instructional time is being carefully and preserved.

Minimization of time. Time is time spent changing what is being done — from one set of materials to another, or from one ac- tion to another. They occur a dozen times a day or more. If they are limited to 30 seconds or a minute, they will not seriously interfere with instructional time. But if they extend to three, five, or even more minutes, we do not even happen without careful time manage- ment — translation: very can quickly consume a half-hour or even an hour of a school day. Direct management of transition activities can prevent this.

Using criteria time. Criterium time is time set aside each day to catch up students who have been absent, to help along a student who is having trouble keeping up with his her group, to help a group which is not maintaining ade- quate lesson progression, etc. In short, it is time used to help bring students to criterion in their academic subjects. Without it, students having difficulty often fall further and further behind. With it, all students can maintain mastery and satisfactory lesson progression.

Other instructional variables can also be managed to produce better student learning and to conserve increasing dollar expendi- tures. First, assignment of homework must make a difference. The instructional power of Direct Instruction materials, achieved through careful programming, is considerably greater than that of traditional materials. Second, instruc-
EUGENE DIRECT INSTRUCTION TRAINING AND INFORMATION CONFERENCE

Session Schedule

Monday, May 8, 1985

AM

PM

A. Diagnostic Reading Inventory: Marye Gay Sprick
B. Improving Behavior: Marye Gay Sprick
C. Statistical Methods: Judy Taplin
D. Teaching the Beginning Reader: Phyllis Haddix
E. Teaching the Intermediate Reader: Krista Haddix
F. Teaching the Advanced Reader: Krista Haddix
G. Supervision of Direct Instruction Programs: Marye Gay Sprick
H. Classroom Management: Marye Gay Sprick

Monday, May 9, 1985

AM

PM

A. Introduction to Special Education: Marye Gay Sprick
B. Compensatory Teaching: Marye Gay Sprick
C. Rehabilitation of the Handicapped Learner: Gaye Cowen
D. Remedial Analysis: Marye Gay Sprick
E. Classroom Management: Marye Gay Sprick
F. Teaching the Severely Handicapped Learner: Gaye Cowen

Tuesday, May 10, 1985

AM

PM

A. Introduction to Special Education: Marye Gay Sprick
B. Compensatory Teaching: Marye Gay Sprick
C. Rehabilitation of the Handicapped Learner: Gaye Cowen
D. Remedial Analysis: Marye Gay Sprick
E. Classroom Management: Marye Gay Sprick
F. Teaching the Severely Handicapped Learner: Gaye Cowen

Wednesday, May 11, 1985

AM

PM

A. Introduction to Special Education: Marye Gay Sprick
B. Compensatory Teaching: Marye Gay Sprick
C. Rehabilitation of the Handicapped Learner: Gaye Cowen
D. Remedial Analysis: Marye Gay Sprick
E. Classroom Management: Marye Gay Sprick
F. Teaching the Severely Handicapped Learner: Gaye Cowen

Thursday, May 12, 1985

AM

PM

A. Introduction to Special Education: Marye Gay Sprick
B. Compensatory Teaching: Marye Gay Sprick
C. Rehabilitation of the Handicapped Learner: Gaye Cowen
D. Remedial Analysis: Marye Gay Sprick
E. Classroom Management: Marye Gay Sprick
F. Teaching the Severely Handicapped Learner: Gaye Cowen

Seating Title

A. Teacher's Name: [Redacted]
B. School: [Redacted]
C. Grade: [Redacted]
D. Subject: [Redacted]
E. Reading Level: [Redacted]
F. Competency Level: [Redacted]
G. Classroom: [Redacted]
H. Special Education: [Redacted]

The Association for Direct Instruction is pleased to invite you to the 11th Annual Eugene Direct Instruction Conference. It will be held at the Eugene Hilton Hotel and Conference Center, in the Eugene Downtown. The conference has a number of attractions to offer professionals interested in furthering both their technical skills and knowledge of instructional technologies. There is a full range of sessions designed for teachers, aides, supervisors and administrators whose goal is to promote educational excellence in all facets of education. Previous participants will find new course offerings in a number of areas of interest.

After a day of work, participants will enjoy evenings in Eugene. Next door to the Hilton is the Hult Center for the Performing Arts, a World class performance hall. Just a few blocks away are restaurants catering to a variety of tastes. Eugene's setting will make the conference a rewarding professional experience and a relaxing vacation for you and your family. To help renew old friendships or make new acquaintances, a picnic has been planned for Monday afternoon.

CONFERENCE REGISTRATION FORM

Where-When. To be held August 5-9, 1985, at the Eugene Hilton Hotel and Conference Center, in downtown Eugene, Oregon.

How to Pre-Register. * Please fill out application form. Enroll with check or school district purchase order for the proper fee. Send application to the Association for Direct Instruction, Pre-registration before July 1 guarantees space in preferred sessions. Any session with less than 20 participants may be cancelled.

Fees and Discounts. The conference registration fee is $125.00. Association members receive a 20% discount. Group reservations of 5 to 9 participants receive a 10% discount, groups of 10-19 receive a 20% discount. For groups of 20 or more, call for a quotation. Ask for Bryan at (503) 485-1293. The member and group discounts cannot be used together. Choose the discount that will benefit you the most. The fee does not include lodging or meals with the exception of the picnic, and coffee each morning. All training materials are included in the fee.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

DIRECT INSTRUCTION NEWS, SUMMER, 1985 - 17

The Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.

Hilton Room Rates. The rate for a single is $38.00 a day. Doubles will be $46.00 ($53.00 per person), plus tax. If you are interested in staying at the Hilton please check "yes" on the pre-registration form. We will then put the hotel in touch with you.
Thoughts on the Future of Computers in the Classroom

By Bob Dixon

It's easier to make observations backward in time than forward. For instance, as a writer I see that we were going into Bandwagon Phase I of microcomputers in the classroom than it is to see what Bandwagon Phase III is going to be. Before I describe Phase II, I should briefly review Bandwagon Phase I.

Bandwagon Phase I, which could be called compensating and there was nothing anyone could do to stop them. The first trend so far, only one in computer education in the classroom was a purchasing revolution. We were low on chalk and teacher morale, but somehow we ended up with a new computer or two or ten. Those computers were immediately useful for at least one clear reason: teaching students about computers. Why teach students about computers? Because computers are becoming more of what nothing anyone can do to stop them. So flaunting the age of that little knowledge is dangerous, we gave students a little knowledge.

Other uses were promised. Computers could do many of the jobs that teachers do, or as some predicted, replace teachers or others sufficiently qualify their roles. Computers could also be used to deliver useful classroom tools—utilitarian.

Whatever the specifics might have been, the belief underlying Phase I was that "computers in the classroom" meant radical revolutionizing in the classroom.

That attitude is a little passe now. We discovered that teachers don’t like working without knowing a byte from a bite. We found that not the serious or least serious teacher programmer is professional. We taught on to the president of Apple Computer Company and all along that he couldn’t imagine why mass was of us were taking little courses on computers. He couldn’t imagine why we’d be so busy happy all about it, nonetheless.) On the brighter side, we learned that the core of acquiring a little dangerous knowledge and computer programming, students might learn some very useful things about the side. A program like Logo, in the hands of a well-trained teacher, has such potential.

But by and large, the deluge of courses and programs on computer literacy appears to be receding rapidly.

We’ve also learned that far too much instructional software falls into one of two categories: 1) that which doesn’t really teach, and 2) the instruction teaches something that could have been taught better and probably more economically elsewhere. We’ve discovered that if computers have any natural predisposition to learning anything long being and remembering. And they won’t add and remember unless someone tells them to and it’s hard to tell them to add and remember in such a way that facilitates effective and economical learning.

Of the three general premises of computers in the classroom—literacy, instruction, and utilities—utilities have shown the greatest promise. Word processors in particular are doing well in the classroom. The credo of Bandwagon Phase II is that computers do not want hard work, literacy, and instruction, and accelerate the development and implementation of better guidance tools and utilities. Marc Turner advocated this post January in a convention of American publishers. Several publishers, it appears, have elected to jump bandwagons.

That much is just history with more than a little interpretation thrown in. There is, however, Phase II that the widely available widespread adoption of networks and network-like systems is sure to bring about something of a Phase II resurgence. But Phase II is where we seem to be now.

I will only go out on a limb regarding what is to come next to this extent: eventually, computers may have almost no noticeable impact on the classroom, or they may have a radical impact upon the classroom, or something between those extremes. That’s a limb, albeit a short one.

I’m personally predisposed against too much emphasis on literacy. Yet over six years I’ve worked extensively with computers. I haven’t learned much about the subject, but it’s safe to say that little knowledge has all too often proven to be dangerous. But I can’t take a hard line on literacy because I don’t know much about it.

I do believe, however, like a sub-spe- cies of an old Phase I hardliner, that the instructional potential of computers is mind-boggling. The reason this point of view is out of grace is, I believe, a very simple one: Phase I looked upon computers as a solution in search of a problem. We ought to be doing instead in education is identifying our instructional problems and looking for instructional solutions, including those that can be implemented via computers.

The difference in point of view is substi- tution. When the computer per se is thought of as a solution, the sources of instructional problems are often ignored. For instance, many worksheets are an instructional problem because the students contain what are meaningless busywork or that bear little direct relationship to the goals of instruction. Put- ting such worksheets on a computer may in fact temporarily motivate students to work harder, but they’re just working harder on poor worksheets. No instruc- tional problem is solved, and some new ones may in fact be created. Content area textbooks are (fortunately an instructional problem, especially for lower performers, because of inadequate ex- amples, concept overloading, and inade- quate review, among many other rea- sons. Putting content area materials on computers does nothing to improve the instructional efficacy of such materials. I will venture to make this forecast: the instructional efficiency of computers in the classroom depends upon the extent to which instructional considerations are prioritized over any other considerations. A computer program might be of significance if it offered adequate and well sequenced examples, numerous re- sponses, opportunities, appropriate and specific feedback to those responses, and individually tailored, performance-specific review.

Once instruction is given top priority, then other "computer-related" con- siderations take on renewed importance, but usually only in a perspective-dependent, memory-size, graphics capabilities, disk manage- ment, and the like become significant or not, depending upon their relevance to higher instructional considerations.

Once instruction is given top priority, we can stop making judgments in the ab- stract about the value of "program features" such as randomness, branch- ing, variety, colorfulness, etc.

Once instruction is given top priority, we will begin to see meaningful innova- tion in courseware products, and new methods of developing and delivering those products will appear; educational operating systems and languages, educa- tionally oriented central file manage- ment, and educationally dedicated hard- ware with keyboards, screen resolution, and other devices specifically designed to facilitate better instruction.

With respect to this point of view, the future of computers and other technolo- gies in the classroom is a minor question relative to the future of instruction in the classroom. It’s the omission. Associate for Direct Instruction to impart positively on that broader future, utilizing whatever resources are available for delivering the most effective and costs cost-effective instruction possible. Maybe computers will be among those resources. But then again, maybe not.
Teaching Science Continued from Page 18

While the area of science is lacking research that specifies instructional strategies that are effective and efficient for use with handicapped learners, it appears that the use of Direct Instruction may be a strategy to facilitate learning in this and other content areas. Until now, traditional techniques specified in text-book series are those used for teaching in most areas of the curriculum. It would appear that change can and should be undertaken. Further research endeavors might seek to investigate which of the two instructional strategies used in this study better facilitates maintenance of learning.

Figure 1. Percent Correct for S1

<table>
<thead>
<tr>
<th>Days</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- TRADITIONAL
- DIRECT INSTRUCTION

Figure 2. Percent Correct for S2

<table>
<thead>
<tr>
<th>Days</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- TRADITIONAL
- DIRECT INSTRUCTION

---

Financial Support for Doctoral Training in Supervision or Computer Technology
University of Oregon, Mildly Handicapped Program
$3,000 to $4,500 plus tuition
Fall 85 and 86
Contact: Doug Carnine, Mildly Handicapped Program, College of Education, University of Oregon, Eugene, OR 97403

VIDEODISC DI FRACTIONS MINI COURSE AVAILABLE FALL 1985

A three-disc program, 35 lessons, 64 page workbook coordinated with disc lessons. For those who do not know basic fraction operations in 5th or 6th grade or remedial. Major skills taught are:

- Whether F is greater or less than 1
- Dividing F.
- Converting mixed or whole numbers to Fs.
- Diagramming F.
- Generating equivalent F.s.
- Ranking Fs by size
- Rewriting improper F.as.
- Adding and subtract F.s with mixed numbers
- Adding and subtract F.s with unlike Denominators

For more information contact SYSTEMS IMPACT INC.,
440 MacArthur Blvd., N.W. Suite 204,
Washington, D.C. 20067

The Second Annual CDIA Conference
A VIABLE TECHNOLOGY OF TEACHING
October 3-5, 1985
Cavanaugh's River Inn
Spokane, Washington

SESSIONS FOR:
- Elementary School Teachers
- Special Education Teachers
- Administrators
- College and University Faculty

MAJOR PRESENTERS:
- Dr. Joseph Ferrara
  Utah State University
- Dr. Maria Collins
  Boise State University

CONFERENCE SESSIONS

Keynote Address:
Knowledge Engineering and the Classroom
Applying Expert Systems In Teacher Education
Classroom Diagnosis and Prescriptions by Computer
Introduction to Direct Instruction
Advanced DI Seminar
Supervision of Direct Instruction
You and Your Child Can Succeed

Reading Mastery Program
Expressive Writing
Your World of Facts
Spelling Mastery
Study Skills Workshop

SPECIAL FEATURES
- No host Social Hours
- FREE Continental Breakfasts
- Beginner to Advanced Sessions
- Material Displays
- Reduced Room Rates
- 25% Discounted Conference Fee for CDIA Members
- Hands-on Computer Labs
- Munch, Munch More ...

FOR MORE INFORMATION WRITE:
Stephanie Scott, 206 Spalding Hall
Lewis Clark State College
Lewiston, ID 83501

DIRECT INSTRUCTION NEWS, SUMMER, 1985 10
AD1 1985 CONFERENCE

August 5-9: 11th Annual Eugene Direct Instruction Conference

All conference sessions are designed to increase the competence of Regular and Special Education Teachers, Aides, Supervisors and Administrators whose goal is to promote excellence in all areas of education.

★ Sessions on New Technologies, Writing Skills, Diagnosis, etc.
★ Updated training on revised Direct Instruction programs
★ College Credit available
★ 20% Discount for AD1 members (40% for student members)
★ Group discounts available

For more information write or call:
Bryan Wickman
Association for Direct Instruction
P.O. Box 10252
Eugene, OR 97440
(503) 485-1293

Join the ASSOCIATION
Those joining now get membership through Aug. 1986

OPTIONS:

a. Student membership... $7/year (includes DI News and a 40% discount on AD1 sponsored conferences and 20% discount on public albums).
b. Regular membership... $15/year (includes DI News and a 20% discount on all AD1 sponsored events and events).
c. Sustaining membership... $30 or more/year (helps to ensure our survival).
d. DI News subscription only... $5/year (outside of North America & Hawaii... $10/year).

AD1 sponsored products and events include books and other materials published or marketed by the Association (DI Reading, DI Mathematics, Theory of Instruction, the Annual Direct Instruction Training Conference, and on-site training consultation available from AD1 staff or contractors).

DI News (Direct Instruction News) is published four times a year (fall, winter, spring, summer).

To join the association, clip out this form and mail it in, with your check or U.S. funds only.

ASSOCIATION FOR DIRECT INSTRUCTION
P.O. BOX 10252, Eugene, Oregon 97440

CHECK ONE

A. STUDENT MEMBER ($7 ANNUALLY)
B. MEMBER ($15 ANNUALLY)
C. SUSTAINING MEMBER ($30 OR MORE INITIALLY)
D. I WISH TO RECEIVE THE NEWS ONLY. A CHECK FOR $5 (OR $10 OUTSIDE NORTH AMERICA & HAWAII) IS ENCLOSED.

NAME:

MAILING ADDRESS:

20 DIRECT INSTRUCTION NEWS, SUMMER, 1985

Generalized Compliance Training
By Siegfried Engelmann & Geoff Colvin
NON-MEMBERS $20 [ADD $1.50 PER BOOK FOR SHIPPING] MEMBERS $16
Teach Your Child to Read in 100 Easy Lessons
By S. Engelmann, P. Haddox & E. Bruner
NON-MEMBERS $15 [ADD $1.50 PER BOOK FOR SHIPPING] MEMBERS $12
- ORDER AS IN AD BELOW -

Theory of Instruction
By Siegfried Engelmann & Douglas Carnine
NON-MEMBERS $25 [ADD $1.50 FOR SHIPPING COST] MEMBERS $20
DI Reading or DI Mathematics
NON-MEMBERS $30 [ADD $1.50 FOR SHIPPING COST FOR EACH BOOK] MEMBERS $24
Send U.S. Funds To: Association for Direct Instruction
P.O. Box 10252
Eugene, Oregon 97440